

**1**

Cairo Governorate



Western Cairo Educational Zone  
Mathematics Inspection

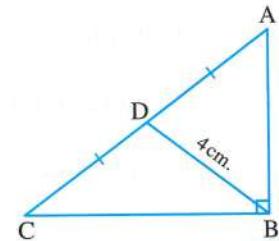
*Answer the following questions :*

**1** Choose the correct answer :

**1** In the opposite figure :

$AC = \dots \text{ cm.}$

(a) 4	(b) 6
(c) 8	(d) 2



**2** If  $\Delta ABC$  is right-angled at A and  $AB = AC$ , then  $m(\angle B) = \dots$

(a) $30^\circ$	(b) $45^\circ$	(c) $60^\circ$	(d) $90^\circ$
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**3** In  $\Delta ABC$ , if  $AB = 6 \text{ cm.}$ ,  $AC = 7 \text{ cm.}$ , then  $BC \in \dots$

(a) $[6, 13]$	(b) $[6, 7]$	(c) $[1, 13]$	(d) $[1, 7]$
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**4** In  $\Delta XYZ$ , if  $XY < XZ$ , then .....

(a) $m(\angle Y) \leq m(\angle Z)$	(b) $m(\angle Y) > m(\angle Z)$
(c) $m(\angle Y) = m(\angle Z)$	(d) $m(\angle Z) > m(\angle Y)$

**5** If  $\Delta ABC$  is right-angled at B,  $m(\angle A) = 55^\circ$ , then the number of axes of symmetry of  $\Delta ABC$  equals .....

(a) 1	(b) 2	(c) 3	(d) zero
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**6** The triangle in which the measures of two angles of it are  $42^\circ$  and  $69^\circ$  is ..... triangle.

(a) an isosceles	(b) an equilateral	(c) a scalene	(d) a right-angled
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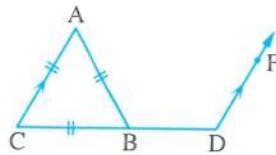
**2** Complete the following :

- 1** Any point on the axis of symmetry of a line segment is ..... from its terminals.
- 2** The longest side in the right-angled triangle is .....
- 3** The point of intersection of the medians of the triangle divides each of them by the ratio ..... : ..... from the vertex.
- 4** The measure of any exterior angle of an equilateral triangle equals ..... $^\circ$
- 5** The sum of the lengths of any two sides in a triangle is ..... the length of the third side.

**3 [a] In the opposite figure :**

$\triangle ABC$  is an equilateral triangle ,  $\overline{DF} \parallel \overline{AC}$

Find by proof :  $m(\angle D)$

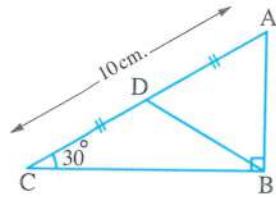


**[b] In the opposite figure :**

$m(\angle ABC) = 90^\circ$  ,  $m(\angle C) = 30^\circ$

,  $AC = 10\text{ cm.}$  ,  $AD = DC$

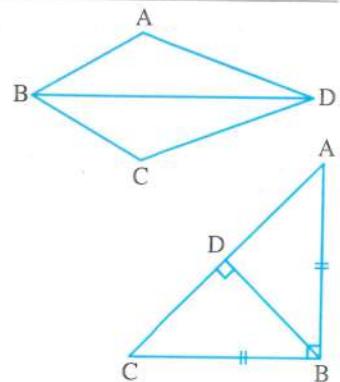
Find : The perimeter of  $\triangle ABD$



**4 [a] In the opposite figure :**

$AB < AD$  ,  $BC < CD$

Prove that :  $m(\angle ABC) > m(\angle ADC)$

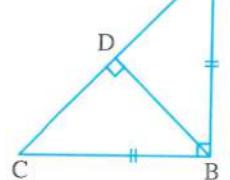


**[b] In the opposite figure :**

$m(\angle ABC) = 90^\circ$  ,  $\overline{BD} \perp \overline{AC}$

,  $AB = BC$

Prove that :  $\triangle DCB$  is an isosceles triangle.



**5 [a] XYZ is a triangle in which  $m(\angle X) = 60^\circ$  ,  $m(\angle Y) = 50^\circ$**

Order the lengths of the sides of the triangle descendingly.

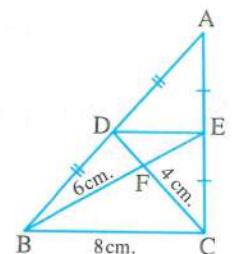
**[b] In the opposite figure :**

$\triangle ABC$  is a triangle in which D , E are the midpoints of  $\overline{AB}$  ,  $\overline{AC}$

,  $FC = 4\text{ cm.}$  ,  $FB = 6\text{ cm.}$

,  $BC = 8\text{ cm.}$

Find : The perimeter of  $\triangle DFE$



**2**

Cairo Governorate



Hadayeq El-Koba Zone  
Al Nokrashy Governmental Lang. School

Answer the following questions :

**1 Choose the correct answer from those given :**

**1** A triangle has one line of symmetry , the lengths of two sides are 4 cm. and 8 cm. , then the length of the third side is ..... cm.

(a) 3      (b) 4      (c) 8      (d) 6

**2** The point of intersection of the medians of the triangle divides each median in the ratio of ..... from the base.

(a)  $2 : 1$       (b)  $2 : 3$       (c)  $1 : 2$       (d)  $1 : 3$

## Geometry

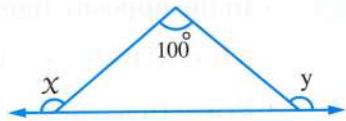
**3** If  $m(\angle A) = 50^\circ$ , then the measure of its reflex angle is .....  
 (a)  $40^\circ$       (b)  $130^\circ$       (c)  $310^\circ$       (d)  $180^\circ$

**4** If the length of the side of an equilateral triangle is 10 cm., then the length of its height is ..... cm.  
 (a) 10      (b) 5      (c)  $5\sqrt{3}$       (d) 6

**5** In  $\Delta ABC$ , if  $AB = 6$  cm.,  $AC = 7$  cm., then the length of  $\overline{BC} \in$  .....  
 (a) [6, 7]      (b) ]1, 7[      (c) [1, 13]      (d) ]1, 13[

**6** In the opposite figure :

$x + y = \dots$   
 (a)  $180^\circ$       (b)  $360^\circ$   
 (c)  $240^\circ$       (d)  $280^\circ$



**2 Complete :**

**1** If the measures of two angles in a triangle are different, then the greater angle in measure of them is .....

**2** In the triangle ABC, if  $m(\angle A) = 50^\circ$ ,  $m(\angle B) = 60^\circ$ , then the longest side is .....

**3** The median drawn from the vertex angle of an isosceles triangle ..... and .....

**4** In  $\Delta ABC$ , if  $m(\angle A) = 30^\circ$ ,  $m(\angle B) = 90^\circ$ , then  $AC = \dots BC$

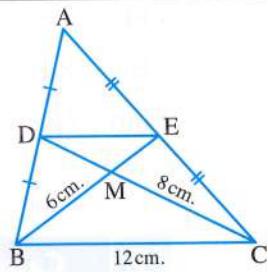
**5** The perpendicular bisector of a line segment is called .....

**3 [a] In the opposite figure :**

In  $\Delta ABC$ :  $\overline{BE}$ ,  $\overline{CD}$  are two medians,  $MB = 6$  cm.

,  $BC = 12$  cm.,  $MC = 8$  cm.

**Find :** The perimeter of  $\Delta MDE$



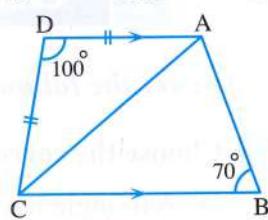
**[b] In the opposite figure :**

$\overline{AD} \parallel \overline{BC}$ ,  $AD = DC$

,  $m(\angle D) = 100^\circ$ ,  $m(\angle B) = 70^\circ$

**Prove that :** **1**  $AC > AB$

**2**  $\Delta ABC$  is isosceles.



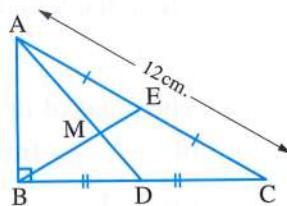
**4 [a] In the opposite figure :**

$\Delta ABC$  is right-angled at B

, E and D are the midpoints of  $\overline{AC}$ ,  $\overline{BC}$  respectively

,  $AC = 12$  cm.

**Find :** The length of each of  $\overline{BE}$ ,  $\overline{ME}$



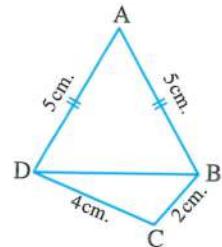
**[b] In the opposite figure :**

ABCD is a quadrilateral

, AB = AD = 5 cm.

, BC = 2 cm. , DC = 4 cm.

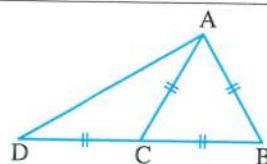
**Prove that :**  $m(\angle ABC) > m(\angle ADC)$



**5 [a] In the opposite figure :**

AB = BC = AC = CD

**Prove that :**  $m(\angle BAD) = 90^\circ$

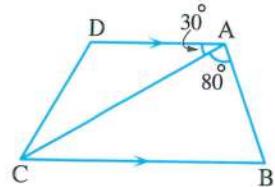


**[b] In the opposite figure :**

$\overline{AD} \parallel \overline{BC}$  ,  $m(\angle BAC) = 80^\circ$

,  $m(\angle DAC) = 30^\circ$

**Prove that :** BC > AB



3

Cairo Governorate



New Cairo Educational Zone  
Dr. Nermien Ismail Schools

**Answer the following questions :**

**1 Choose the correct answer :**

**1** In  $\triangle ABC$  , if  $AB = AC$  ,  $m(\angle B) = 40^\circ$  , then  $m(\angle A) = \dots\dots\dots$

(a)  $70^\circ$       (b)  $55^\circ$       (c)  $100^\circ$       (d)  $40^\circ$

**2** The point of concurrence of the medians of the triangle divides each median at the ratio ..... from the vertex.

(a)  $1 : 2$       (b)  $2 : 1$       (c)  $2 : 3$       (d)  $1 : 3$

**3** In  $\triangle ABC$  , if  $AB = 7$  cm. ,  $BC = 10$  cm. , then the length of  $\overline{AC}$  must satisfy which of the following inequalities ?

(a)  $3 \leq AC \leq 17$       (b)  $3 < AC < 17$       (c)  $10 < AC < 20$       (d)  $14 < AC < 20$

**4** If  $\triangle ABD$  is obtuse-angled at B and C is the midpoint of  $\overline{BD}$  , then the longest side in  $\triangle ABD$  is .....

(a)  $\overline{AB}$       (b)  $\overline{AC}$       (c)  $\overline{AD}$       (d)  $\overline{BD}$

**5** In  $\triangle ABC$  , if  $m(\angle A) = 64^\circ$  ,  $m(\angle B) = 35^\circ$  , then the longest side of the triangle is .....

(a)  $\overline{AB}$       (b)  $\overline{AC}$       (c)  $\overline{BC}$       (d) otherwise.

## Geometry

**6** ABCD is a rectangle , M is the point of intersection of its diagonals , if the length of the diagonal is 6 cm. , then the length of the median  $\overline{AM}$  is ..... cm.

(a) 3

(b) 6

(c) 9

(d) 12

**2 Complete each of the following :**

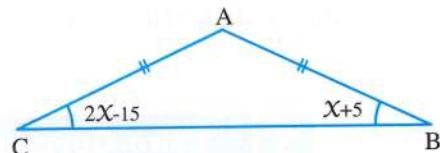
- 1** The length of the side which is opposite to the angle of measure  $30^\circ$  in the right-angled triangle equals ..... the length of the hypotenuse.
- 2** In the right-angled triangle , the longest side is the .....
- 3** The straight line drawn from the vertex of the isosceles triangle , perpendicular to the base ..... this vertex.
- 4** The measure of the exterior angle of the equilateral triangle equals .....°
- 5** The number of axes of symmetry of the isosceles triangle is .....

**3 [a] In the opposite figure :**

ABC is a triangle ,  $AB = AC$  ,  $m(\angle B) = (X + 5)^\circ$

,  $m(\angle C) = (2X - 15)^\circ$

Find :  $m(\angle A)$  (show all of your work)



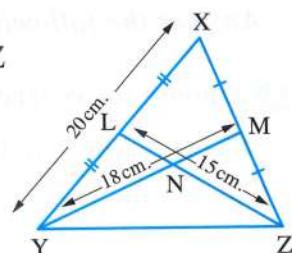
**[b] In the opposite figure :**

N is the point of concurrence of the medians of the triangle XYZ

,  $LZ = 15$  cm. ,  $YM = 18$  cm.

,  $XY = 20$  cm.

Find : The perimeter of the triangle NLY



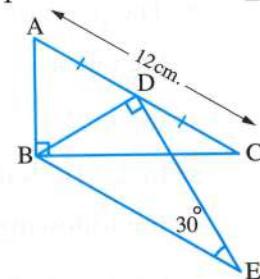
**[c] In the opposite figure :**

$m(\angle ABC) = m(\angle BDE) = 90^\circ$

, D is the midpoint of  $\overline{AC}$

,  $m(\angle E) = 30^\circ$  ,  $AC = 12$  cm.

Find with proof : The length of  $\overline{BE}$



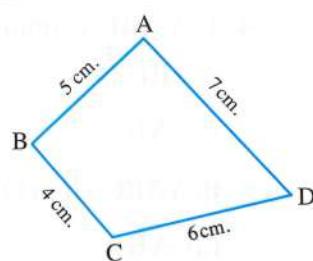
**4 [a] In the opposite figure :**

ABCD is a quadrilateral in which :

$AB = 5$  cm. ,  $BC = 4$  cm. ,  $CD = 6$  cm.

,  $AD = 7$  cm.

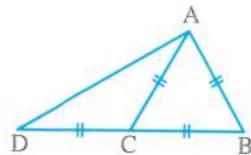
Prove that :  $m(\angle ABC) > m(\angle ADC)$



**[b] In the opposite figure :**

$$AB = AC = CB = CD$$

**Prove that :**  $\overline{AB} \perp \overline{AD}$



**[c] XYZ is a triangle in which :  $XY = 10 \text{ cm.}$ ,  $YZ = 6 \text{ cm.}$  and  $XZ = 8 \text{ cm.}$**

Arrange the measures of the angles of the triangle.

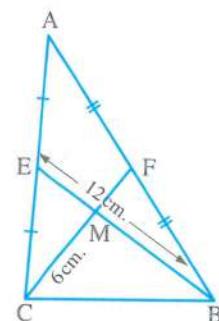
**[d] In the opposite figure :**

ABC is a triangle in which : F , E are the midpoints of  $\overline{AB}$  and  $\overline{AC}$  respectively  
of  $\overline{AB}$  and  $\overline{AC}$  respectively

$$, EB = 12 \text{ cm.}$$

$$, MC = 6 \text{ cm.}$$

**Find with proof :** The length of each of  $\overline{EM}$  and  $\overline{MF}$

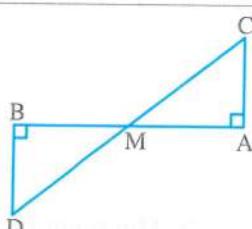


**5 [a] In the opposite figure :**

$$\overline{DC} \cap \overline{AB} = \{M\}$$

$$, m(\angle A) = m(\angle B) = 90^\circ$$

**Prove that :**  $DC > AB$



**[b] ABC is a triangle in which :  $m(\angle A) = (6x)^\circ$**

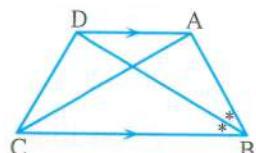
$$, m(\angle B) = (4x - 9)^\circ, m(\angle C) = 3(x - 2)^\circ$$

Arrange the lengths of the sides of the triangle.

**[c] In the opposite figure :**

$\overline{AD} \parallel \overline{BC}$  ,  $\overline{BD}$  bisects  $\angle ABC$

**Prove that :**  $\triangle BAD$  is an isosceles triangle.



4

Giza Governorate



South Giza Administration

**Answer the following questions :**

**1 Choose the correct answer :**

**1** If the measures of two angles of a triangle are  $40^\circ$  ,  $100^\circ$  , then the triangle is ..... triangle.

(a) an isosceles      (b) an equilateral      (c) a scalene      (d) a right-angled

**2** The angle whose measure is more than  $90^\circ$  and less than  $180^\circ$  is ..... angle.

(a) an acute      (b) an obtuse      (c) a straight      (d) a reflex

## Geometry

**3** If the lengths of two sides in an isosceles triangle are 7 cm. and 3 cm. , then the length of the third side is ..... cm.

(a) 3      (b) 10      (c) 7      (d) 4

**4** In  $\Delta ABC$  , if  $m(\angle B) = 120^\circ$  , then the longest side in it is .....

(a)  $\overline{BC}$       (b)  $\overline{AC}$       (c)  $\overline{AB}$       (d) its median.

**5** If  $\Delta ABC$  is right-angled at B ,  $AB = 3$  cm. ,  $BC = 4$  cm. , then the length of the median from B is ..... cm.

(a) 5      (b) 4      (c) 2.5      (d) 6

**6** In  $\Delta ABC$  , if  $m(\angle A) = 30^\circ$  ,  $m(\angle B) = 90^\circ$  and  $AC = 10$  cm. , then  $BC =$  .....

(a) 20 cm.      (b) 15 cm.      (c) 10 cm.      (d) 5 cm.

**2 Complete each of the following :**

**1** The angle of measure  $70^\circ$  complements an angle of measure ..... $^\circ$

**2** In  $\Delta ABC$  , if  $AB = 3$  cm. ,  $BC = 5$  cm. , then  $AC \in ]\dots\dots\dots\dots\dots\dots\dots[$

**3** If  $\overline{AB} \cong \overline{CD}$  and  $AB = 6$  cm. , then  $AB + CD = \dots\dots\dots$  cm.

**4** The bisector of the vertex angle of an isosceles triangle ..... and .....

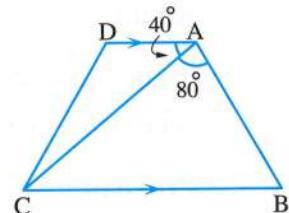
**5** The point of intersection of the medians of the triangle divides each median in the ratio ..... : ..... from the vertex.

**3 [a] In the opposite figure :**

$\overline{AD} \parallel \overline{BC}$  ,  $m(\angle BAC) = 80^\circ$

and  $m(\angle DAC) = 40^\circ$

**Prove that :**  $BC > AC$



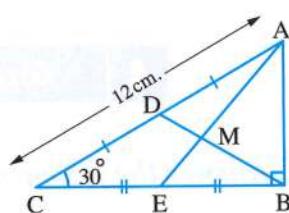
**[b] In the opposite figure :**

$\Delta ABC$  is right-angled at B ,  $m(\angle C) = 30^\circ$

, D is the midpoint of  $\overline{AC}$

, E is the midpoint of  $\overline{BC}$  ,  $AC = 12$  cm.

**Find :** The length of each of  $\overline{BD}$  ,  $\overline{BM}$  and  $\overline{AB}$

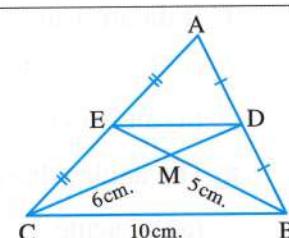


**4 [a] In the opposite figure :**

D and E are the midpoints of  $\overline{AB}$  and  $\overline{AC}$  respectively

,  $BC = 10$  cm. ,  $MB = 5$  cm. and  $MC = 6$  cm.

**Find :** The perimeter of  $\Delta MDE$

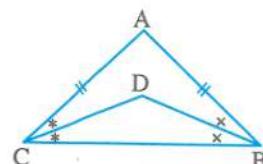


[b] In the opposite figure :

$AB = AC$ ,  $\overrightarrow{BD}$  bisects  $\angle ABC$

and  $\overrightarrow{CD}$  bisects  $\angle ACB$

Prove that :  $\triangle DBC$  is an isosceles triangle.

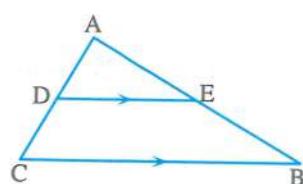


5 [a] In the opposite figure :

$ABC$  is a triangle in which :

$AB > AC$  and  $\overline{DE} \parallel \overline{BC}$

Prove that :  $m(\angle ADE) > m(\angle AED)$

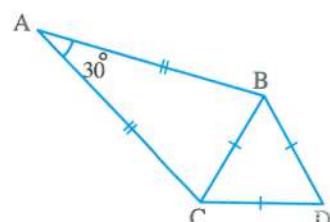


[b] In the opposite figure :

$m(\angle A) = 30^\circ$ ,  $AB = AC$

and  $\triangle DBC$  is equilateral.

Find :  $m(\angle ABD)$



5

Giza Governorate



Boulaq El Dakrour Directorate  
Dar El Hanan Lang. Sch. For Girls

Answer the following questions :

1 Choose the correct answer :

1 The lengths 9 cm., 4 cm. and ..... may be the side lengths of an isosceles triangle.  
(a) 9 cm. (b) 13 cm. (c) 5 cm. (d) 4 cm.

2 In  $\triangle ABC$ , if  $m(\angle B) = 130^\circ$ , then the longest side of it is .....

(a)  $\overline{BC}$  (b)  $\overline{AC}$  (c)  $\overline{AB}$  (d) its median.

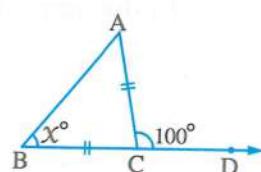
3 In the opposite figure :

$CA = CB$ ,  $m(\angle B) = x^\circ$

,  $m(\angle ACD) = 100^\circ$  where  $C \in \overline{BD}$

, then  $x = \dots$

(a)  $50^\circ$  (b)  $100^\circ$  (c)  $150^\circ$  (d)  $200^\circ$



4 The measure of the exterior angle of an equilateral triangle equals .....

(a)  $30^\circ$  (b)  $60^\circ$  (c)  $90^\circ$  (d)  $120^\circ$

5 In  $\triangle ABC$ , if  $AB = 6$  cm. and  $AC = 7$  cm., then  $BC \in \dots$

(a)  $[6, 13]$  (b)  $[6, 7]$  (c)  $[1, 13[$  (d)  $[1, 7[$

## Geometry

**6 In the opposite figure :**

$$AD = DC, m(\angle C) = 30^\circ$$

$$, m(\angle ABC) = 90^\circ, AB = 5 \text{ cm.}$$

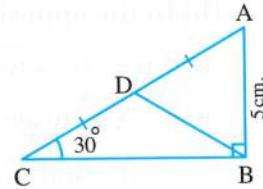
, then the perimeter of  $\Delta ABD = \dots \text{ cm.}$

(a) 5

(b) 15

(c) 20

(d) 25



**2 Complete the following :**

**1** ABC is a triangle in which  $AB = AC$  and  $m(\angle A) = 60^\circ$  , if its perimeter = 18 cm.  
, then  $BC = \dots \text{ cm.}$

**2** The number of the axes of symmetry of the equilateral triangle equals .....

**3** The longest side of the right-angled triangle is the .....

**4** If the angles of a triangle are congruent , then the triangle is .....

**5** In  $\Delta ABC$  , if  $AB > BC$  , then  $m(\angle A) \dots m(\angle C)$

**3 [a] In the opposite figure :**

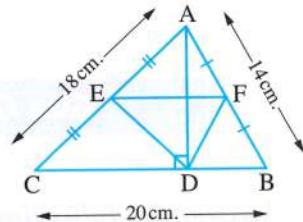
ABC is a triangle in which  $AB = 14 \text{ cm.}$

,  $AC = 18 \text{ cm.}$  ,  $BC = 20 \text{ cm.}$

, E is the midpoint of  $\overline{AC}$

, F is the midpoint of  $\overline{AB}$  and  $\overline{AD} \perp \overline{BC}$

**Find :** The perimeter of  $\Delta DEF$

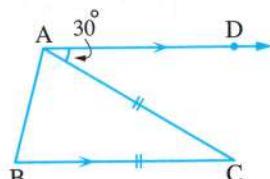


**[b] In the opposite figure :**

ABC is a triangle in which  $AC = BC$

,  $\overrightarrow{AD} \parallel \overrightarrow{BC}$  ,  $m(\angle DAC) = 30^\circ$

**Find with proof :** The measures of the angles of  $\Delta ABC$

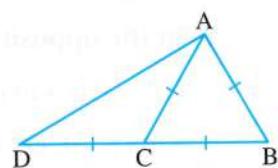


**4 [a] In the opposite figure :**

$AB = BC = AC = DC$

**Prove that :**

$m(\angle BAD) = 90^\circ$



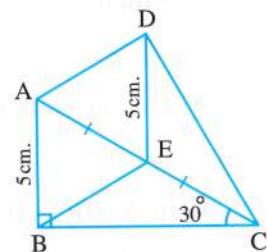
**[b] In the opposite figure :**

$m(\angle ABC) = 90^\circ$  , E is the midpoint of  $\overline{AC}$

,  $m(\angle ACB) = 30^\circ$

,  $AB = DE = 5 \text{ cm.}$

**Prove that :**  $m(\angle ADC) = 90^\circ$



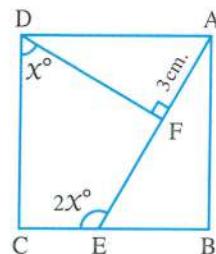
**5 [a]** In  $\triangle ABC$ ,  $m(\angle A) = 40^\circ$ ,  $m(\angle B) = 75^\circ$ ,  $m(\angle C) = 65^\circ$ , arrange the lengths of the sides of this triangle descendingly.

**[b]** In the opposite figure :

ABCD is a square,  $E \in \overline{BC}$

where  $m(\angle FDC) = x^\circ$  and  $m(\angle FEC) = 2x^\circ$ ,  $\overline{DF} \perp \overline{AE}$ ,  $AF = 3\text{ cm}$ .

Calculate : The area of the square ABCD

**6****Alexandria Governorate**

El-Montazah Educational Zone  
Leaders Language School

Answer the following questions :

**1 Complete :**

- 1** If  $\triangle ABC$  is a right-angled triangle at B,  $m(\angle A) = 30^\circ$ ,  $AC = 10\text{ cm}$ , then  $CB = \dots\text{ cm}$ .
- 2** In  $\triangle ABC$ ,  $m(\angle A) = m(\angle B) = m(\angle C)$ , then the measure of the exterior angle equals  $\dots^\circ$ .
- 3** In  $\triangle ABC$ ,  $AB = AC$ ,  $m(\angle B) = x + 30^\circ$ ,  $m(\angle C) = 2x + 5^\circ$ , then  $x = \dots^\circ$ .
- 4** In a triangle, if two angles are unequal in measure, then the greater angle in measure is opposite to  $\dots$ .
- 5** In any triangle, the sum of the lengths of any two sides  $\dots$  the length of the third side.

**2 Choose the correct answer :**

- 1** If  $\overline{AD}$  is a median of  $\triangle ABC$  and M is the point of concurrence of the medians, then  $AM = \dots AD$ 
  - (a)  $\frac{2}{3}$
  - (b)  $\frac{1}{2}$
  - (c)  $\frac{3}{2}$
  - (d) 2
- 2** The measure of one of the base angles of an isosceles triangle is  $65^\circ$ , then the measure of its vertex angle equals  $\dots^\circ$ 
  - (a) 65
  - (b) 50
  - (c) 130
  - (d) 55
- 3** In the triangle ABC, if  $m(\angle A) = 50^\circ$ ,  $m(\angle B) = 60^\circ$ , then the longest side is  $\dots$ 
  - (a)  $\overline{AB}$
  - (b)  $\overline{BC}$
  - (c)  $\overline{AC}$
  - (d) 110 cm.
- 4** The numbers which can not be side lengths of a triangle are  $\dots$ 
  - (a) 3, 3, 3
  - (b) 3, 3, 4
  - (c) 3, 3, 5
  - (d) 3, 3, 6





*Answer the following questions :*

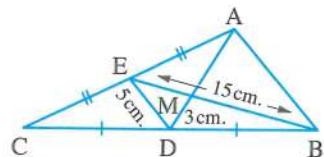
**1** Choose the correct answer :

**2** Complete each of the following :

- 1 The length of the median of the right-angled triangle drawn from the vertex of the right angle equals ..... the length of the hypotenuse.
- 2 The number of the axes of symmetry of an isosceles triangle is .....
- 3 The measure of the exterior angle of the equilateral triangle equals .....°
- 4 The two angles of the base of an isosceles triangle are .....
- 5 The sum of the measures of the accumulative angles at a point equals .....°

**3 [a]** In the opposite figure :

If E is the midpoint of  $\overline{AC}$  and D is the midpoint of  $\overline{BC}$ ,  $ED = 5$  cm.,  $MD = 3$  cm. and  $BE = 15$  cm.  
**Find :** The perimeter of  $\triangle AMB$



**[b]** ABC is a triangle in which :  $m(\angle B) = 40^\circ$ ,  $m(\angle C) = 80^\circ$   
Arrange its side lengths ascendingly.

## Geometry

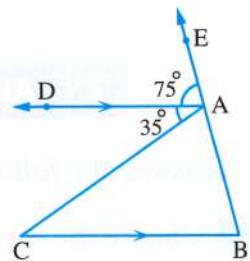
**4 [a] In the opposite figure :**

$$\overrightarrow{AD} \parallel \overrightarrow{BC}$$

,  $m(\angle EAD) = 75^\circ$

and  $m(\angle DAC) = 35^\circ$

**Prove that :**  $AC > AB$



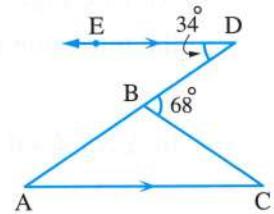
**[b] In the opposite figure :**

$$\overrightarrow{DE} \parallel \overrightarrow{AC}$$

,  $m(\angle EDA) = 34^\circ$

and  $m(\angle DBC) = 68^\circ$

**Prove that :**  $\Delta ABC$  is an isosceles triangle.

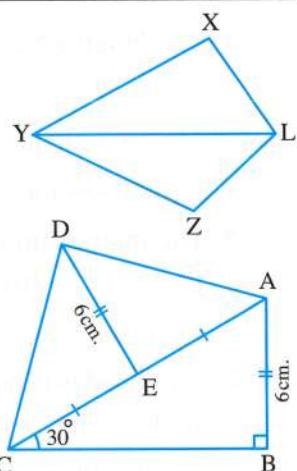


**5 [a] In the opposite figure :**

If  $XY > XL$

,  $YZ > ZL$

, **prove that :**  $m(\angle XLZ) > m(\angle XYZ)$



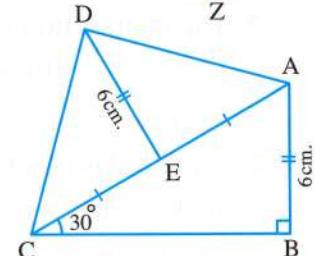
**[b] In the opposite figure :**

$m(\angle B) = 90^\circ$ ,  $m(\angle ACB) = 30^\circ$

, E is the midpoint of  $\overline{AC}$  and  $AB = DE = 6\text{ cm}$ .

**Find :** ① The length of  $\overline{AC}$

②  $m(\angle ADC)$



**8**

**El-Kalyoubia Governorate**



**Math Supervision**

**Answer the following questions :**

**1 Choose the correct answer :**

① In any isosceles triangle , the type of the base angles is .....

(a) acute. (b) right. (c) obtuse. (d) reflex.

② The medians of the triangle intersect at .....

(a) 4 points. (b) 3 points. (c) 2 points. (d) a point.

③ ABC is a triangle in which  $m(\angle A) = 100^\circ$  , then the greatest side in length in the triangle is .....

(a)  $\overline{AB}$  (b)  $\overline{AC}$  (c)  $\overline{BC}$  (d)  $\overline{BD}$

④ The numbers which can be lengths of sides of a triangle are .....

(a) 0 , 3 , 5 (b) 3 , 3 , 5 (c) 3 , 3 , 6 (d) 3 , 3 , 7

**5** The triangle which has three axes of symmetry is .....  
 (a) scalene. (b) isosceles. (c) right-angled. (d) equilateral.

**6** If  $\triangle ABC$  is an equilateral triangle, then  $m(\angle B) = \dots$ .  
 (a)  $30^\circ$  (b)  $60^\circ$  (c)  $70^\circ$  (d)  $90^\circ$

**2 Complete :**

**1** In  $\triangle ABC$ , if the point D is the midpoint of  $\overline{AB}$  and the point E is the midpoint of  $\overline{AC}$ , then  $DE = \dots$   $\overline{BC}$

**2** The base angles in the isosceles triangle are ..... in measure.

**3** In the triangle, the smallest angle in measure is opposite to ..... side in length.

**4** In the triangle ABC, if  $AB = AC$ ,  $m(\angle A) = 70^\circ$ , so  $m(\angle C) = \dots^\circ$

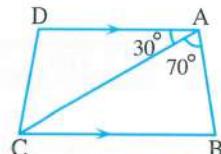
**5** The point of concurrence of the medians of the triangle divides each median in the ratio of ..... from the base.

**3 [a] In the opposite figure :**

$\overline{AD} \parallel \overline{BC}$ ,  $m(\angle BAC) = 70^\circ$

,  $m(\angle DAC) = 30^\circ$

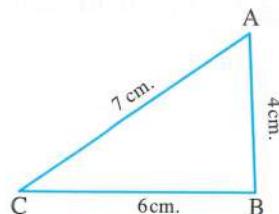
Prove that :  $AC > BC$


**[b] In the opposite figure :**

$AB = 4 \text{ cm.}$ ,  $BC = 6 \text{ cm.}$

,  $AC = 7 \text{ cm.}$

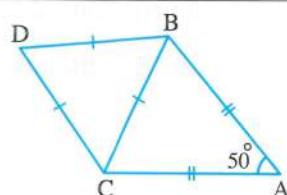
Arrange the measures of the angles of the triangle ABC descendingly.


**4 [a] In the opposite figure :**

$m(\angle A) = 50^\circ$ ,  $AB = AC$

and  $\triangle DBC$  is an equilateral triangle.

Find :  $m(\angle ABD)$

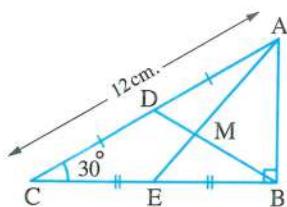

**[b] In the opposite figure :**

$\triangle ABC$  is right-angled at B,  $m(\angle C) = 30^\circ$

, D is the midpoint of  $\overline{AC}$

, E is the midpoint of  $\overline{BC}$ ,  $AC = 12 \text{ cm.}$

Find : The length of each of  $\overline{BD}$ ,  $\overline{BM}$  and  $\overline{AB}$



**5 [a] In the opposite figure :**

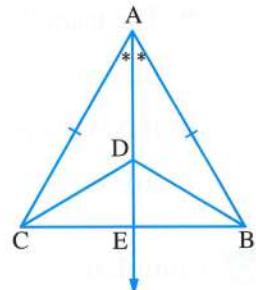
ABC is a triangle in which :

$AB = AC$ ,  $\overline{AE}$  bisects  $\angle BAC$

,  $\overline{AE} \cap \overline{BC} = \{E\}$ ,  $D \in \overline{AE}$

**Prove that :** ①  $BE = \frac{1}{2} BC$

②  $BD = CD$



**[b] In the opposite figure :**

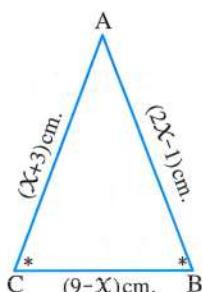
ABC is a triangle in which :

$m(\angle B) = m(\angle C)$

,  $AB = (2x - 1)$  cm.

,  $AC = (x + 3)$  cm.,  $BC = (9 - x)$  cm.

**Find :** The perimeter of the triangle ABC



**9**

**El-Sharkia Governorate**



Hehia Educational Zone  
Governmental Language Schools

**Answer the following questions :**

**1 Complete the following :**

① The base angles of the isosceles triangle are .....

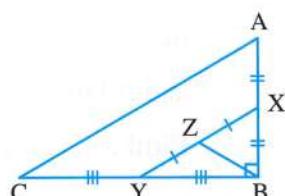
② In  $\triangle ABC$ , if  $\overline{AB} \perp \overline{BC}$  and  $AB = BC$ , then  $m(\angle A) = \dots^{\circ}$

③ In  $\triangle ABC$ , if  $AB > AC$ , then  $m(\angle C) \dots m(\angle B)$

④ The triangle whose side lengths are  $(2x - 1)$  cm.,  $(x + 3)$  cm., 7 cm. becomes an equilateral triangle when  $x = \dots$  cm.

**5 In the opposite figure :**

$AC = \dots$   $BZ$



**2 Choose the correct answer from those given :**

① The sum of lengths of any two sides in a triangle is ..... the length of the third side.

(a) smaller than

(b) greater than

(c) equal to

(d) twice

**2** The measure of the exterior angle of the equilateral triangle equals .....  
 (a)  $30^\circ$       (b)  $60^\circ$       (c)  $90^\circ$       (d)  $120^\circ$

**3** The length of the hypotenuse of the right-angled triangle equals ..... the length of the median drawn from the vertex of the right angle.  
 (a) third      (b) quarter      (c) half      (d) twice

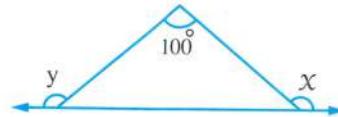
**4** The lengths of two sides in a triangle are 4 cm. and 9 cm. and it has one axis of symmetry , then the length of the third side is .....  
 (a) 4 cm.      (b) 5 cm.      (c) 9 cm.      (d) 13 cm.

**5** The quadrilateral ABCD in which  $\overline{BD}$  is an axis of symmetry of  $\overline{AC}$  may be  
 a .....  
 (a) rhombus.      (b) rectangle.      (c) parallelogram.      (d) trapezium.

**6** In the opposite figure :

$$x + y = \dots$$

(a)  $100^\circ$   
 (b)  $280^\circ$   
 (c)  $140^\circ$   
 (d)  $80^\circ$

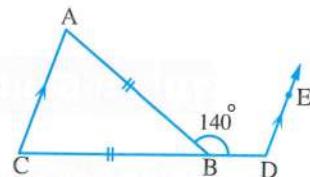


**3 [a] In the opposite figure :**

$$AB = BC, m(\angle ABD) = 140^\circ$$

and  $\overline{AC} \parallel \overline{DE}$

Find :  $m(\angle EDC)$



**[b] In the opposite figure :**

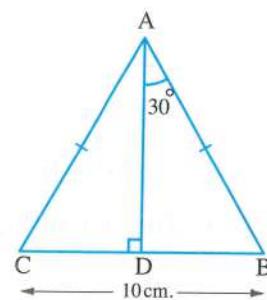
$$AB = AC, BC = 10 \text{ cm.}$$

,  $m(\angle BAD) = 30^\circ$

and  $\overline{AD} \perp \overline{BC}$

Find : 1 The length of each of  $\overline{BD}$  and  $\overline{AD}$

2 The area of  $\triangle ABC$



**4 [a] In the opposite figure :**

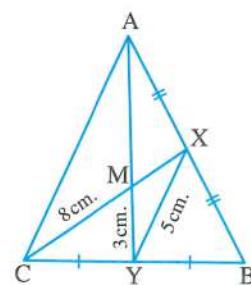
ABC is a triangle , X is the midpoint of  $\overline{AB}$

, Y is the midpoint of  $\overline{BC}$  ,  $XY = 5 \text{ cm.}$

,  $\overline{XC} \cap \overline{AY} = \{M\}$  where  $CM = 8 \text{ cm.}$

,  $YM = 3 \text{ cm.}$

Find : The perimeter of  $\triangle MXY$

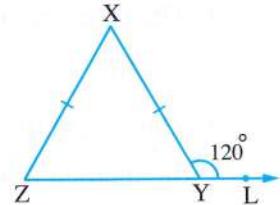


[b] In the opposite figure :

$XY = XZ$ ,  $m(\angle XYL) = 120^\circ$ ,  $L \in \overrightarrow{ZY}$

Prove that :

$\triangle XYZ$  is an equilateral triangle.

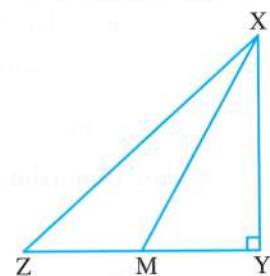


5 [a] In the opposite figure :

$\triangle XYZ$  is a right-angled triangle

at Y and  $M \in \overline{YZ}$

Prove that :  $XZ > XM$



[b] In the opposite figure :

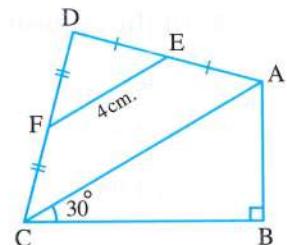
ABCD is a quadrilateral in which :

$m(\angle B) = 90^\circ$ , E is the midpoint of  $\overline{AD}$

, F is the midpoint of  $\overline{CD}$

,  $m(\angle ACB) = 30^\circ$  and  $EF = 4\text{ cm}$ .

Find by proof : The length of  $\overline{AB}$



10

El-Gharbia Governorate



The Central Maths Supervision  
Official Language Schools

Answer the following questions :

1 Choose the correct answer :

1 In  $\triangle ABC$ , if  $m(\angle C) = 65^\circ$ ,  $m(\angle A) = 75^\circ$ , then .....

(a)  $AB > BC$       (b)  $AB < AC$       (c)  $BC > AB$       (d)  $AB = AC$

2 The sum of measures of two angles in the equilateral triangle equals .....

(a)  $180^\circ$       (b)  $60^\circ$       (c)  $360^\circ$       (d)  $120^\circ$

3 The numbers 5, 4, ..... can be lengths of sides of a triangle.

(a) 8      (b) 9      (c) 10      (d) 12

4 If M is the point of intersection of the medians of  $\triangle ABC$  and D is the midpoint of  $\overline{BC}$ , then  $AD =$  .....

(a)  $2 AM$       (b)  $3 MD$       (c)  $\frac{2}{3} MD$       (d)  $AM$

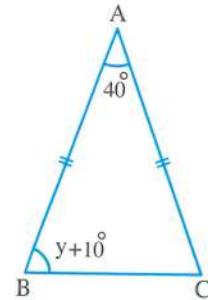
5 If  $\triangle ABC$  is right-angled at B, then .....

(a)  $AC < AB$       (b)  $AC > BC$       (c)  $AB = AC$       (d)  $BC > AC$

**6** In the opposite figure :

$y = \dots\dots\dots$

- (a)  $30^\circ$
- (b)  $40^\circ$
- (c)  $60^\circ$
- (d)  $70^\circ$



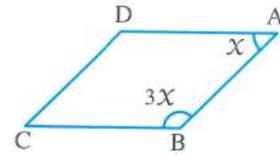
**2** Complete the following :

- 1 In  $\triangle XYZ$ , if  $XY = XZ$ ,  $\overrightarrow{XL} \perp \overrightarrow{YZ}$ , then  $\overrightarrow{XL}$  bisects each of ..... and .....
- 2 The number of axes of symmetry of the isosceles triangle is .....
- 3 If  $ABC$  is a right-angled triangle at  $B$ ,  $AB = BC$ , then  $m(\angle C) = \dots\dots\dots^\circ$
- 4 The longest side of the right-angled triangle is .....

**5** In the opposite figure :

ABCD is a parallelogram

, then  $X = \dots\dots\dots^\circ$



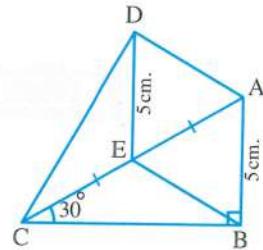
**3 [a]** In the opposite figure :

ABC is a right-angled triangle at B

,  $m(\angle ACB) = 30^\circ$ ,  $AB = 5 \text{ cm}$ .

and E is the midpoint of  $\overline{AC}$

If  $DE = 5 \text{ cm}$ . , prove that :  $m(\angle ADC) = 90^\circ$



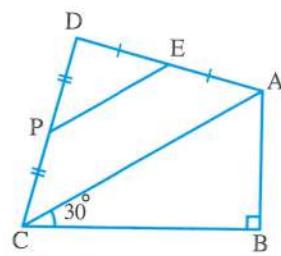
**[b]** In the opposite figure :

$m(\angle B) = 90^\circ$ ,  $m(\angle ACB) = 30^\circ$

E is the midpoint of  $\overline{AD}$

, P is the midpoint of  $\overline{CD}$

Prove that :  $AB = EP$

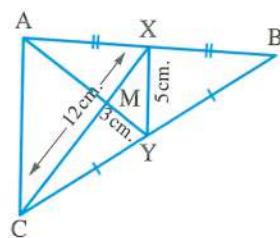


**4 [a]** In the opposite figure :

M is the intersection point of the medians of  $\triangle ABC$ ,  $XY = 5 \text{ cm}$ .

,  $CX = 12 \text{ cm}$ . ,  $MY = 3 \text{ cm}$ .

Find with proof : The perimeter of  $\triangle MAC$



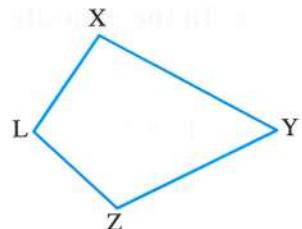
## Geometry

**[b] In the opposite figure :**

$XY > XL$  and  $YZ > ZL$

**Prove that :**

$$m(\angle XLZ) > m(\angle XYZ)$$



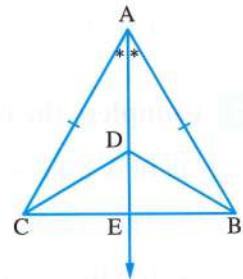
**5 [a] In the opposite figure :**

ABC is a triangle in which  $AB = AC$

,  $\overrightarrow{AE}$  bisects  $\angle BAC$

**Prove that :**

**1**  $BE = \frac{1}{2} BC$       **2**  $BD = CD$



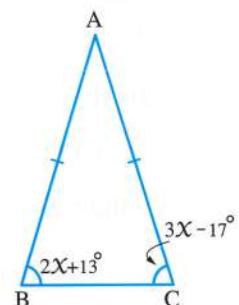
**[b] In the opposite figure :**

$AB = AC$  ,  $m(\angle B) = 2x + 13^\circ$

,  $m(\angle C) = 3x - 17^\circ$

**Find :**

The measures of the angles of  $\triangle ABC$



**11**

Suez Governorate



Math Inspectorate

**Answer the following questions :**

**1 Choose the correct answer :**

**1** In  $\triangle ABC$  , if  $AB = 3$  cm. ,  $BC = 5$  cm. , then  $AC \in \dots$

(a)  $[3, 5]$       (b)  $[3, 5]$       (c)  $[2, 8]$       (d)  $[2, 8]$

**2** If the lengths of two sides of an isosceles triangle are 5 cm. and 10 cm. , then the length of the third side is ..... cm.

(a) 10      (b) 5      (c) 15      (d) 4

**3** In  $\triangle ABC$  , if  $m(\angle A) = 100^\circ$  , then the longest side of it is .....

(a)  $\overline{AB}$       (b)  $\overline{AC}$       (c)  $\overline{BC}$       (d) its median.

**4** In  $\triangle ABC$  , if  $2m(\angle A) = m(\angle B) + m(\angle C)$  , then  $m(\angle A) = \dots^\circ$

(a) 45      (b) 90      (c) 60      (d) 120

**5** If  $A \in$  the axis of symmetry of  $\overline{BC}$  , then  $\overline{AB} \dots \overline{AC}$

(a)  $\equiv$       (b)  $=$       (c)  $\parallel$       (d)  $\perp$

**6** The point of intersection of the medians of the triangle divides each of them in the ratio ..... from the vertex.

(a) 2 : 1      (b) 3 : 1      (c) 3 : 2      (d) 1 : 2

**2 Complete :**

- 1** The base angles of an isosceles triangle are ..... in measure.
- 2** If  $\triangle ABC$  has one axis of symmetry and  $m(\angle A) = 120^\circ$ , then  $m(\angle B) = \dots^\circ$ .
- 3** In  $\triangle ABC$ , if  $AB > AC$ , then  $m(\angle C) > \dots$ .
- 4** The bisector of the vertex angle of an isosceles triangle ..... and .....
- 5** In a triangle, if two angles are unequal in measure, then the greater angle in measure is opposite to .....

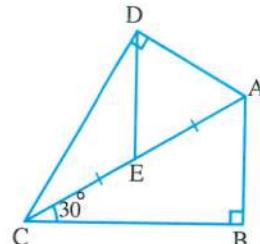
**3 [a] In the opposite figure :**

$$m(\angle B) = 90^\circ, m(\angle ADC) = 90^\circ$$

$$, m(\angle ACB) = 30^\circ$$

,  $\overline{DE}$  is a median in  $\triangle ADC$

**Prove that :**  $AB = DE$



**[b]** In  $\triangle ABC$ , if  $AB = 7 \text{ cm.}$ ,  $BC = 5 \text{ cm.}$ ,  $AC = 6 \text{ cm.}$ , arrange the measures of the angles of the triangle ABC ascendingly.

**4 [a] In the opposite figure :**

$$AB > BC, AD > CD$$

**Prove that :**

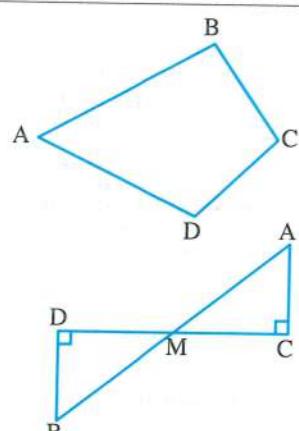
$$m(\angle C) > m(\angle A)$$

**[b] In the opposite figure :**

$$\overline{AB} \cap \overline{CD} = \{M\}$$

$$, m(\angle C) = m(\angle D) = 90^\circ$$

**Prove that :**  $AB > DC$

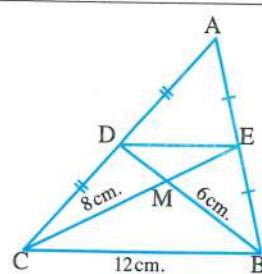


**5 [a] In the opposite figure :**

If D, E are the midpoints of  $\overline{AC}$ ,  $\overline{AB}$

,  $MB = 6 \text{ cm.}$ ,  $MC = 8 \text{ cm.}$ ,  $BC = 12 \text{ cm.}$

**Find :** The perimeter of  $\triangle MDE$

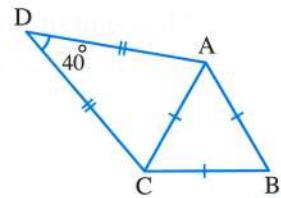


[b] In the opposite figure :

$$AB = BC = AC, DA = DC$$

$$\therefore m(\angle D) = 40^\circ$$

Find :  $m(\angle BAD)$



## 12 Port Said Governorate



Educational Directorate  
Math Department

*Answer the following questions :*

### 1 Choose the correct answer :

1 In  $\Delta ABC$ , if  $AC = 4 \text{ cm.}$ ,  $BC = 3 \text{ cm.}$ , then  $m(\angle B) \dots m(\angle A)$

(a)  $>$       (b)  $<$       (c)  $=$       (d)  $\leq$

2 The length of the side opposite to the angle of measure  $30^\circ$  in the right-angled triangle equals ..... the length of the hypotenuse.

(a) half      (b) twice      (c) third      (d) quarter

3 In  $\Delta ABC$ , if  $m(\angle A) = 100^\circ$  and  $AB = AC$ , then  $m(\angle ABC) = \dots$

(a)  $80^\circ$       (b)  $60^\circ$       (c)  $40^\circ$       (d)  $30^\circ$

4 The point of intersection of the medians of the triangle divides each of them in the ratio ..... from the base.

(a)  $1 : 3$       (b)  $3 : 1$       (c)  $1 : 2$       (d)  $2 : 1$

5 If  $\Delta ABD$  is obtuse-angled at B and C is the midpoint of  $\overline{BD}$ , then the longest side is .....

(a)  $\overline{AB}$       (b)  $\overline{AC}$       (c)  $\overline{AD}$       (d)  $\overline{BD}$

6 The triangle whose side lengths are  $2 \text{ cm.}$ ,  $(X + 3) \text{ cm.}$  and  $5 \text{ cm.}$ , becomes an isosceles triangle when  $X = \dots \text{ cm.}$

(a) 1      (b) 2      (c) 3      (d) 4

### 2 Complete :

1 The median of an isosceles triangle from the vertex angle bisects ..... and is perpendicular to .....

2 The measure of the exterior angle at any vertex of the equilateral triangle is .....°

3 The base angles of the isosceles triangle are .....

4 ABC is a triangle in which  $AB = 4 \text{ cm.}$ ,  $BC = 6 \text{ cm.}$ , then  $AC \in ]\dots, \dots[$

5 The longest side in the right-angled triangle is .....

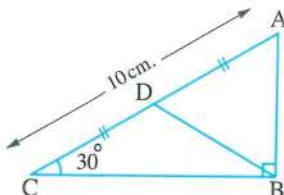
**3 [a]** In  $\triangle ABC$ , if  $m(\angle A) = (6x)^\circ$ ,  $m(\angle B) = (4x - 9)^\circ$  and  $m(\angle C) = 3(x - 2)^\circ$ , arrange the side lengths of  $\triangle ABC$  ascendingly.

**[b] In the opposite figure :**

$$m(\angle ABC) = 90^\circ, m(\angle C) = 30^\circ$$

,  $AD = DC$  and  $AC = 10 \text{ cm}$ .

**Find :** The perimeter of  $\triangle ABD$



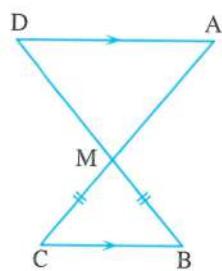
**4 [a] In the opposite figure :**

$$\text{If } \overline{AC} \cap \overline{BD} = \{M\}$$

,  $\overline{AD} \parallel \overline{BC}$  and  $MB = MC$

**, prove that :**

$\triangle MAD$  is isosceles.

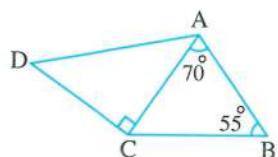


**[b] In the opposite figure :**

$$m(\angle BAC) = 70^\circ, m(\angle B) = 55^\circ$$

and  $m(\angle ACD) = 90^\circ$

**Prove that :**  $AD > AB$

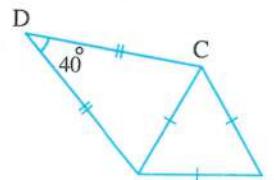


**5 [a] In the opposite figure :**

$$m(\angle D) = 40^\circ, DA = DC$$

and  $\triangle ABC$  is equilateral

**Find :**  $m(\angle DCB)$

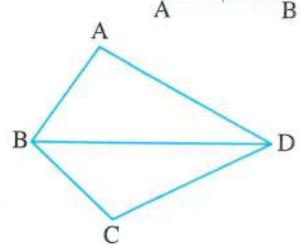


**[b] In the opposite figure :**

$AB < AD$  and  $BC < CD$

**Prove that :**

$$m(\angle ABC) > m(\angle ADC)$$



13

Damietta Governorate



Damietta Education Zone  
Inspector of Math

**Answer the following questions :**

**1 Complete each of the following :**

**1** If the measure of one of the base angles of an isosceles triangle equals  $50^\circ$ , then the measure of the vertex angle equals ..... $^\circ$

**2** The supplementary of the obtuse angle is ..... angle.

## Geometry

**3** The longest side in the right-angled triangle is .....

**4** The perpendicular straight line on a line segment from its midpoint is called .....

**5** If 4 cm., 7 cm. are the lengths of two sides in a triangle , then ..... < the length of the third side < .....

**2 Choose the correct answer :**

**1** The point of intersection of the medians of the triangle divides each of them in the ratio of ..... from the base.  
 (a) 1 : 2      (b) 2 : 1      (c) 1 : 1      (d) 1 : 3

**2** In  $\Delta ABC$ , if  $m(\angle B) = 70^\circ$ ,  $m(\angle C) = 50^\circ$ , then  $AB \dots AC$   
 (a)  $>$       (b)  $<$       (c)  $=$       (d)  $\geq$

**3** The number of the quadrilaterals in the figure  is .....  
 (a) 3      (b) 4      (c) 5      (d) 6

**4** In the right-angled triangle , the length of the median from the vertex of the right angle equals ..... the length of the hypotenuse.  
 (a)  $\frac{1}{2}$       (b) double      (c)  $\frac{1}{3}$       (d)  $\frac{1}{4}$

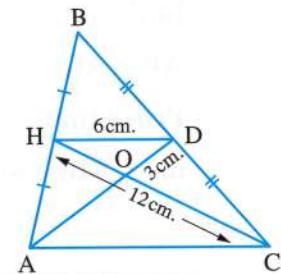
**5** The sum of the measures of the accumulative angles at a point equals .....  
 (a) 90      (b) 180      (c) 360      (d) 308

**6** The number of lines of symmetry of  $\Delta ABC$  in which  $AB = AC$ ,  $m(\angle B) = 60^\circ$  is .....  
 (a) 3      (b) 2      (c) 1      (d) zero

**3 [a] In the opposite figure :**

$HD = 6 \text{ cm.}$ ,  $HC = 12 \text{ cm.}$   
 , H is the midpoint of  $\overline{AB}$   
 and D is the midpoint of  $\overline{BC}$   
 ,  $DO = 3 \text{ cm.}$

**Calculate :** The perimeter of the triangle AOC

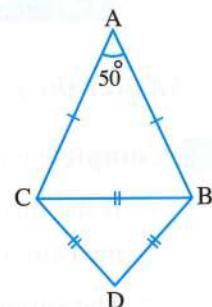


**[b] In the opposite figure :**

$AB = AC$ ,  $m(\angle A) = 50^\circ$

$\triangle CDB$  is equilateral.

**Find with proof :**  $m(\angle ABD)$



**4 [a]** In the opposite figure :

$$AB = AC, BD < CD$$

Prove that :

$$m(\angle ABD) > m(\angle ACD)$$

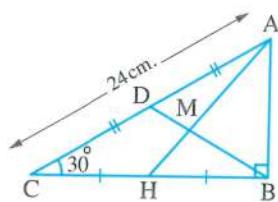
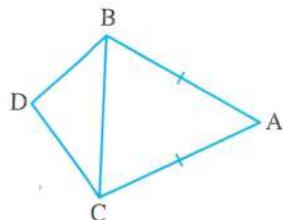
**[b]** In the opposite figure :

$\triangle ABC$  is right-angled at B

,  $\overline{AH}$ ,  $\overline{BD}$  are two medians

$$, m(\angle C) = 30^\circ, AC = 24 \text{ cm.}$$

Find : The length of each of  $\overline{AB}$ ,  $\overline{BD}$ ,  $\overline{BM}$



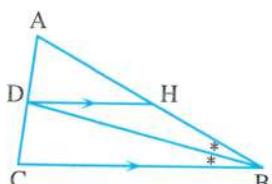
**5 [a]** In the opposite figure :

$\overrightarrow{BD}$  bisects  $\angle ABC$

,  $\overline{HD} \parallel \overline{BC}$

Prove that :

$\triangle HBD$  is an isosceles triangle.

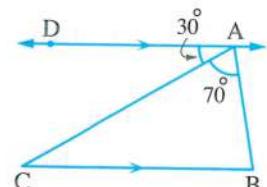


**[b]** In the opposite figure :

$\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$ ,  $m(\angle BAC) = 70^\circ$

$$, m(\angle DAC) = 30^\circ$$

Prove that :  $AC > BC$



**14**

Egyptian Governorate



East El-Fayoum Zone  
El-Eman Language School

Answer the following questions :

**1** Choose the correct answer from those given :

**1** In  $\triangle ABC$ , if  $(AB)^2 = (BC)^2 - (AC)^2$ ,  $m(\angle C) = 42^\circ$ , then  $m(\angle B) = \dots$

(a)  $40^\circ$       (b)  $90^\circ$       (c)  $48^\circ$       (d)  $110^\circ$

**2** The scalene triangle has ..... axes of symmetry.

(a) 3      (b) 2      (c) 1      (d) 0

**3** If A lies on the axis of symmetry of  $\overline{BC}$ , then  $AB \dots AC$

(a)  $<$       (b)  $>$       (c)  $=$       (d)  $\leq$

## Geometry

**4** If  $\overline{AD}$  is a median of  $\triangle ABC$ , M is the point of concurrence of the medians , then  $MD = \dots \dots \dots AD$

(a)  $\frac{1}{3}$       (b)  $\frac{2}{3}$       (c)  $\frac{1}{2}$       (d)  $\frac{1}{4}$

**5** If 10 cm., 5 cm. and  $x$  cm. are side lengths of an isosceles triangle , then  $x = \dots \dots \dots$  cm.

(a) 5      (b) 10      (c) 15      (d) 4

**6** The measure of the exterior angle of the equilateral triangle equals .....

(a)  $60^\circ$       (b)  $90^\circ$       (c)  $50^\circ$       (d)  $120^\circ$

**2 Complete the following :**

**1** The total area of a cuboid =  $120 \text{ cm}^2$  and its lateral area =  $96 \text{ cm}^2$  , then the area of its base equals .....  $\text{cm}^2$

**2** The base angles of the isosceles triangle are .....

**3** ABC is a right-angled triangle at B ,  $m(\angle C) = 30^\circ$  ,  $AB = 5 \text{ cm}$ . , then  $AC = \dots \dots \dots$  cm.

**4** In  $\triangle ABC$  , if  $m(\angle C) = 30^\circ$  ,  $m(\angle A) = 70^\circ$  , then the smallest side in length is .....

**5** In any triangle , if the lengths of two sides are not equal , then the greater side in length is opposite to .....

**3 [a] In the opposite figure :**

M is the concurrence point of the medians of  $\triangle ABC$

,  $\overline{AM} \perp \overline{CD}$  ,  $AD = 5 \text{ cm}$  . ,  $MC = 6 \text{ cm}$ .

**Find with proof :** The length of  $\overline{ME}$

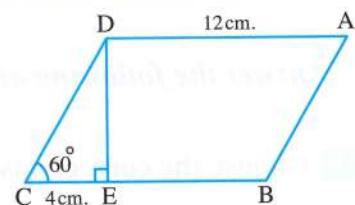
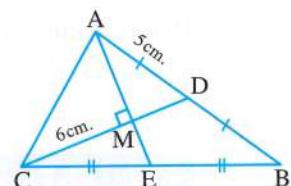
**[b] In the opposite figure :**

ABCD is a parallelogram

,  $m(\angle C) = 60^\circ$  ,  $\overline{DE} \perp \overline{BC}$

,  $AD = 12 \text{ cm}$  . ,  $CE = 4 \text{ cm}$ .

**Find with proof :** The perimeter of the parallelogram ABCD

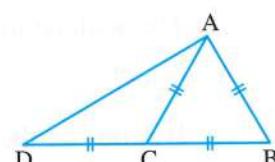


**4 [a] In the opposite figure :**

ABC is an equilateral triangle

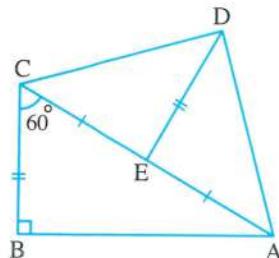
,  $D \in \overrightarrow{BC}$  ,  $BC = CD$

**Prove that :**  $\overline{AB} \perp \overline{AD}$



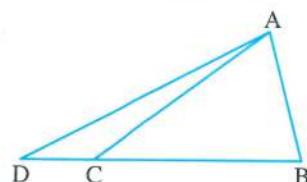
**[b] In the opposite figure :**

ABC is a right-angled triangle at B  
 $m(\angle ACB) = 60^\circ$ , E is the midpoint of  $\overline{AC}$   
 $DE = BC$   
**Prove that :**  $m(\angle ADC) = 90^\circ$



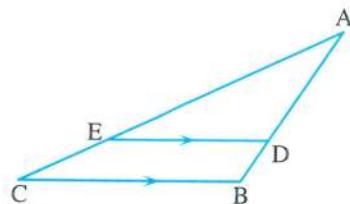
**5 [a] In the opposite figure :**

$C \in \overline{BD}$ ,  $AC > AB$   
**Prove that :**  $m(\angle B) > m(\angle D)$



**[b] In the opposite figure :**

ABC is an obtuse-angled triangle at B  
 $\overline{DE} \parallel \overline{BC}$   
**Prove that :**  $AE > AD$



15

Luxor Governorate



Armant Educational Directorate  
 Mohamed Raafat Lang. Sch.

*Answer the following questions :*

**1 Complete the following :**

- 1 In the right-angled triangle , the ..... is the longest side.
- 2 In  $\triangle ABC$  , if D is the midpoint of  $\overline{BC}$  and  $AD = \frac{1}{2} BC$  , then  $m(\angle A) = \dots^\circ$ .
- 3 In  $\triangle ABC$  , if  $m(\angle B) = 65^\circ$  and  $m(\angle C) = 50^\circ$  , then the shortest side in  $\triangle ABC$  is .....
- 4 In  $\triangle ABC$  , if the point X is the midpoint of  $\overline{BC}$  , then  $\overline{AX}$  is called .....
- 5 The measure of the exterior angle of the equilateral triangle is ..... $^\circ$

**2 Choose the correct answer :**

- 1 In  $\triangle ABC$  , if  $m(\angle B) > m(\angle C)$  , then .....

(a)  $AB < AC$ 
(b)  $AB = AC$ 
(c)  $AB > AC$ 
(d)  $\overline{AB} \equiv \overline{AC}$

- 2 The point of concurrence of the medians of the triangle divides each median in the ratio of ..... from the base.

(a) 1 : 2
(b) 1 : 3
(c) 2 : 1
(d) 3 : 1

**3** The lengths of two sides in a triangle are 4 cm., 9 cm. and it has one axis of symmetry , then the length of the third side is ..... cm.

(a) 4      (b) 5      (c) 9      (d) 13

**4** The number of axes of symmetry of the equilateral triangle equals .....

(a) 0      (b) 1      (c) 2      (d) 3

**5** If  $\triangle ABC$  is right-angled at B ,  $AB = 6$  cm. ,  $BC = 8$  cm. , then the length of the median drawn from B is ..... cm.

(a) 10      (b) 8      (c) 6      (d) 5

**6** The lengths which can be lengths of sides of a triangle are .....

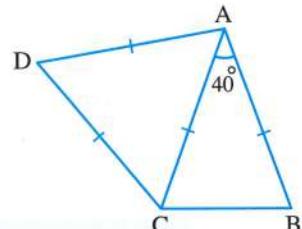
(a) 0 , 3 , 5      (b) 3 , 3 , 5      (c) 3 , 3 , 6      (d) 3 , 3 , 7

**3 [a] In the opposite figure :**

$$AB = AC = AD = CD$$

$$, m(\angle BAC) = 40^\circ$$

**Find :**  $m(\angle BCD)$



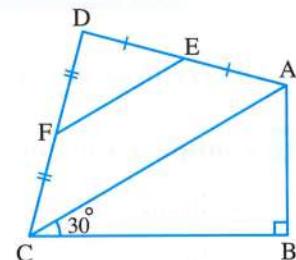
**[b] In the opposite figure :**

$$m(\angle B) = 90^\circ, m(\angle ACB) = 30^\circ$$

, E is the midpoint of  $\overline{AD}$

, F is the midpoint of  $\overline{CD}$

**Prove that :**  $AB = EF$



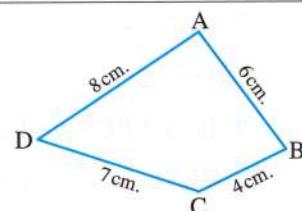
**4 [a] In the opposite figure :**

ABCD is a quadrilateral in which :

$$AB = 6 \text{ cm.}, BC = 4 \text{ cm.}$$

$$, CD = 7 \text{ cm.}, DA = 8 \text{ cm.}$$

**Prove that :**  $m(\angle BCD) > m(\angle BAD)$



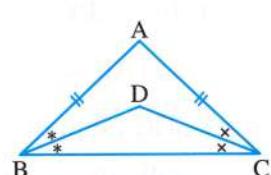
**[b] In the opposite figure :**

ABC is a triangle in which :

$$AB = AC, \overrightarrow{BD} \text{ bisects } \angle ABC$$

,  $\overrightarrow{CD}$  bisects  $\angle ACB$

**Prove that :**  $\triangle DBC$  is an isosceles triangle.

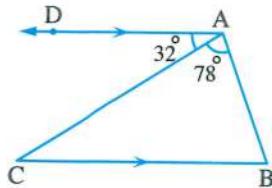


**5 [a] In the opposite figure :**

$\overrightarrow{AD} \parallel \overrightarrow{BC}$ ,  $m(\angle BAC) = 78^\circ$

,  $m(\angle CAD) = 32^\circ$

**Prove that :  $AC > AB$**



**[b] In the opposite figure :**

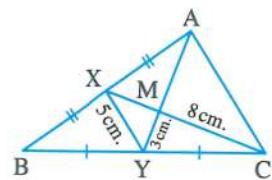
$\triangle ABC$  is a triangle, X is the midpoint of  $\overline{AB}$

, Y is the midpoint of  $\overline{BC}$

,  $\overline{XC} \cap \overline{AY} = \{M\}$ ,  $XY = 5 \text{ cm.}$

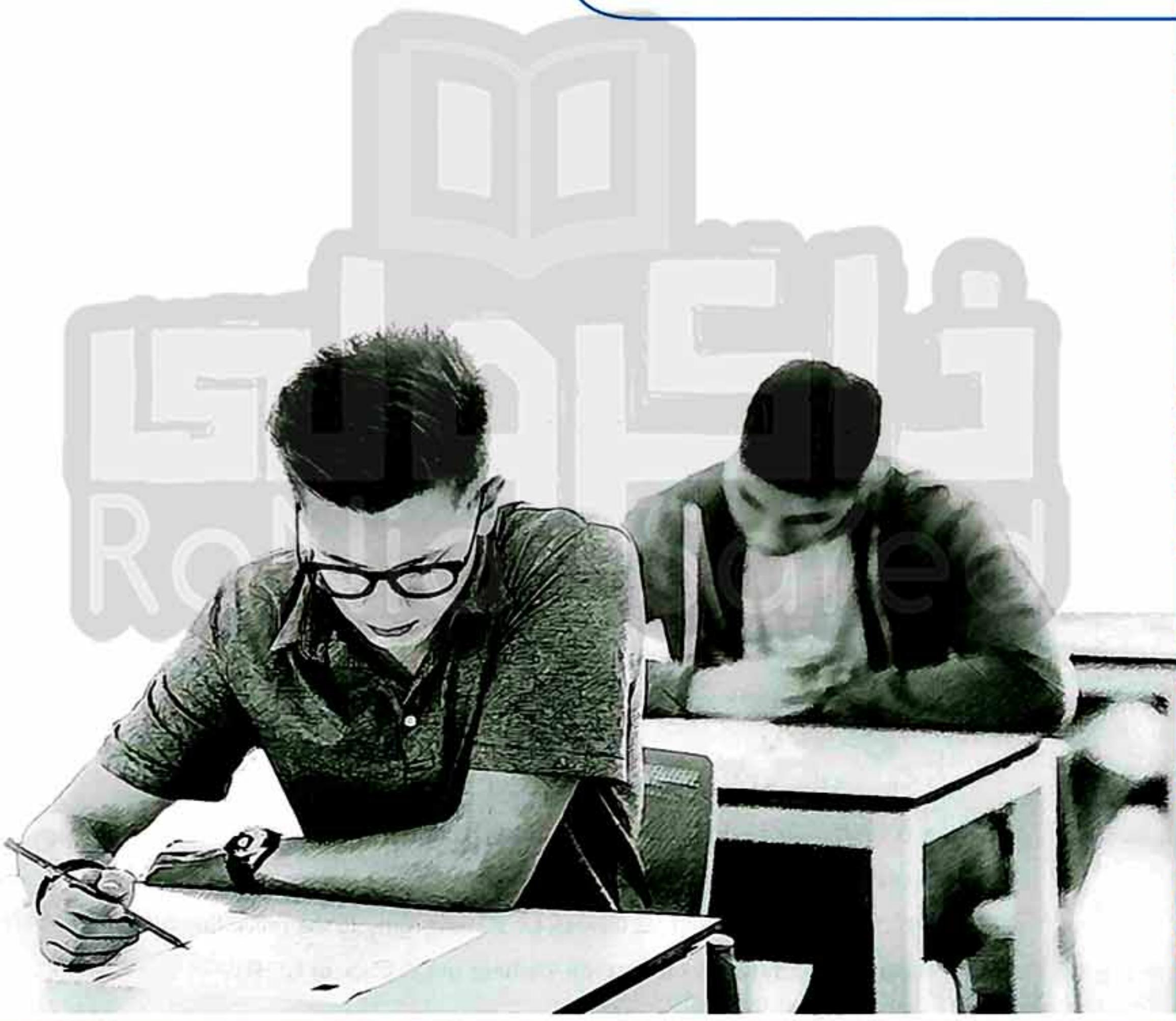
,  $CM = 8 \text{ cm.}$ ,  $YM = 3 \text{ cm.}$

**Find :** The perimeter of  $\triangle MAC$



# Final Examinations

on Geometry



## Model Examinations of the School Book

## on Geometry

## Model 1

Answer the following questions :

## 1 Complete the following :

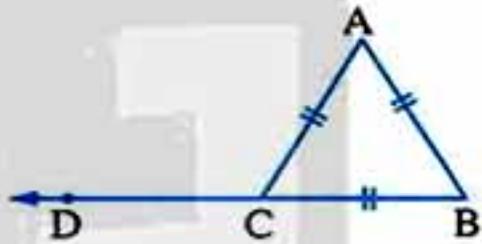
- 1 The longest side in the right-angled triangle is .....
- 2 If the lengths of two sides in a triangle are 2 cm. and 7 cm. , then :  
..... < the length of the third side < .....
- 3 If the measures of two angles in a triangle are different , then the greater in measure of them is opposite to .....
- 4 If the length of the median drawn from a vertex of a triangle equals half the opposite side to this vertex in length , then .....
- 5 If the measure of an angle in the isosceles triangle equals  $60^\circ$  , then the triangle is .....

## 2 Choose the correct answer from those given :

## 1 In the opposite figure :

 $\triangle ABC$  is equilateral , then  $m(\angle ACD) = \dots$ 

(a)  $45^\circ$       (b)  $60^\circ$   
 (c)  $120^\circ$       (d)  $135^\circ$

2 In  $\triangle ABC$  which is right-angled at B , if  $AC = 20$  cm. , then the length of the median of the triangle drawn from B equals .....

(a) 10 cm.      (b) 8 cm.      (c) 6 cm.      (d) 5 cm.

3 XYZ is a triangle in which :  $m(\angle Z) = 70^\circ$  and  $m(\angle Y) = 60^\circ$  , then  $YZ \dots XY$   
(a)  $>$       (b)  $<$       (c)  $=$       (d) twice

## 4 The lengths which can be lengths of sides of a triangle are .....

(a) 0 , 3 , 5      (b) 3 , 3 , 5      (c) 3 , 3 , 6      (d) 3 , 3 , 7

5 The triangle in which the measures of two angles of it are  $42^\circ$  and  $69^\circ$  is .....

(a) an isosceles triangle.      (b) an equilateral triangle.  
 (c) a scalene triangle.      (d) a right-angled triangle.

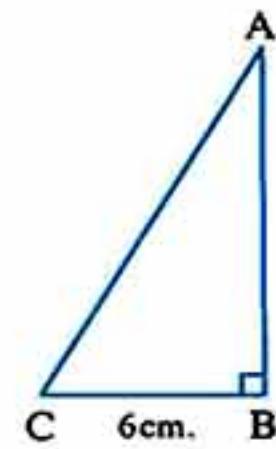
## 6 In the opposite figure :

$$m(\angle C) = 2 m(\angle A)$$

 $, BC = 6$  cm.

 $, \text{then } AC = \dots$  cm.

(a) 3      (b) 6  
 (c) 9      (d) 12



## Geometry

3 [a] Complete : ABC is a triangle in which  $AB > AC$ , then  $m(\angle C) \dots m(\angle B)$

[b] In the opposite figure :

$$m(\angle A) = 50^\circ, AB = AC$$

and  $\triangle DBC$  is equilateral

Find :  $m(\angle ABD)$

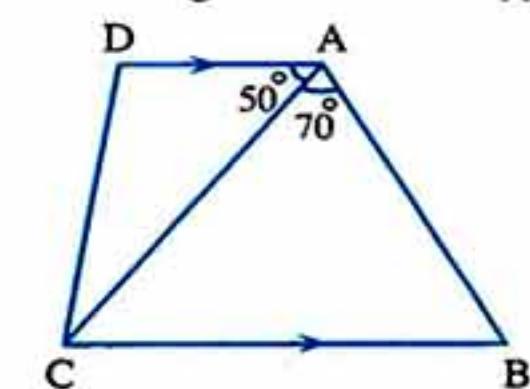
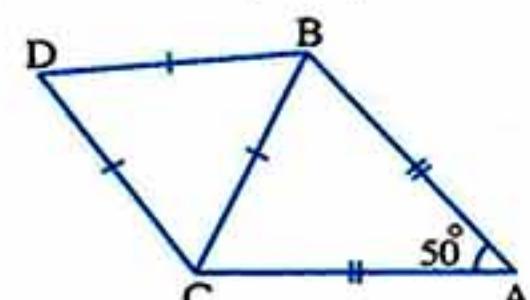
[c] In the opposite figure :

$$\overline{AD} \parallel \overline{BC}$$

$$, m(\angle BAC) = 70^\circ$$

$$\text{and } m(\angle DAC) = 50^\circ$$

Prove that :  $BC > AC$



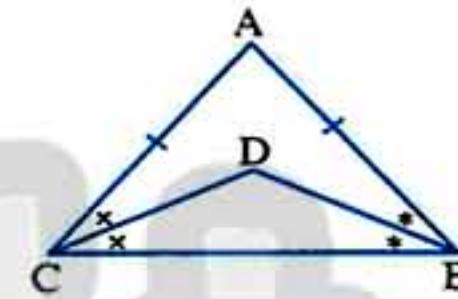
4 [a] Prove that : The two base angles of the isosceles triangle are congruent.

[b] In the opposite figure :

$$AB = AC, \overrightarrow{BD} \text{ bisects } \angle B$$

$$\text{and } \overrightarrow{CD} \text{ bisects } \angle C$$

Prove that :  $\triangle DBC$  is isosceles.



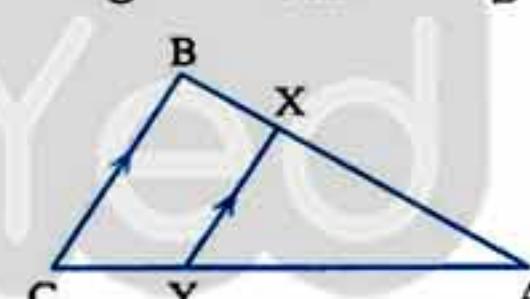
5 [a] In the opposite figure :

Arrange the angles  
of  $\triangle ABC$  descendingly  
due to their measures

[b] In the opposite figure :

$$AB > BC, \overline{XY} \parallel \overline{BC}$$

Prove that :  $AX > XY$



## Model 2

*Answer the following questions :*

1 Choose the correct answer from those given :

1 The triangle which has three axes of symmetry is ..... triangle.

(a) scalene      (b) isosceles      (c) right-angled      (d) equilateral

2 The sum of lengths of two sides in a triangle is ..... the length of the third side.

(a) greater than      (b) smaller than      (c) equals to      (d) twice

3 If the lengths of two sides in an isosceles triangle are 8 cm. and 4 cm., then the length of the third side is ..... cm.

(a) 4      (b) 8      (c) 3      (d) 12

## Final Examinations

4 In  $\triangle ABC$  if  $m(\angle B) = 130^\circ$ , then the longest side of it is .....  
 (a)  $\overline{BC}$       (b)  $\overline{AC}$       (c)  $\overline{AB}$       (d) its median.

5  $\triangle XYZ$  is an isosceles triangle in which :  $m(\angle X) = 100^\circ$ , then  $m(\angle Y) = \dots$   
 (a)  $100^\circ$       (b)  $80^\circ$       (c)  $60^\circ$       (d)  $40^\circ$

6 In the opposite figure :

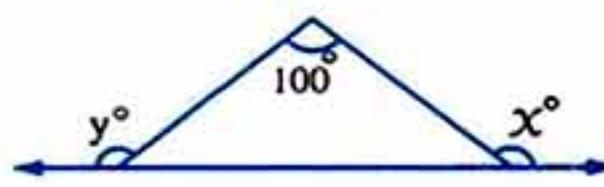
$$x + y = \dots$$

$$(a) 100^\circ$$

$$(c) 180^\circ$$

$$(b) 140^\circ$$

$$(d) 280^\circ$$



2 Complete the following :

1 If the measure of an angle in a right-angled triangle is  $45^\circ$ , then the triangle is .....  
 2 The length of any side in a triangle ..... the sum of lengths of the two other sides.  
 3 If  $\overline{AB} \equiv \overline{XY}$ , then  $AB = \dots$   
 4 In  $\triangle ABC$ , if  $m(\angle A) = 30^\circ$  and  $m(\angle B) = 90^\circ$ , then  $BC = \dots AC$   
 5 The axis of symmetry of a line segment is the straight line which ..... at its midpoint.

3 [a] In  $\triangle ABC$  :  $AB = 7$  cm.,  $BC = 5$  cm. and  $AC = 6$  cm.  
 Arrange its angles ascendingly due to their measures.

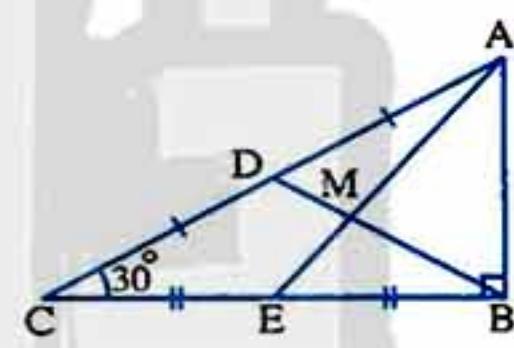
[b] In the opposite figure :

$\triangle ABC$  is right-angled at B

,  $m(\angle C) = 30^\circ$ , D is the midpoint of  $\overline{AC}$

, E is the midpoint of  $\overline{BC}$ ,  $AC = 9$  cm.

Find the length of each of :  $\overline{BD}$ ,  $\overline{BM}$  and  $\overline{AB}$



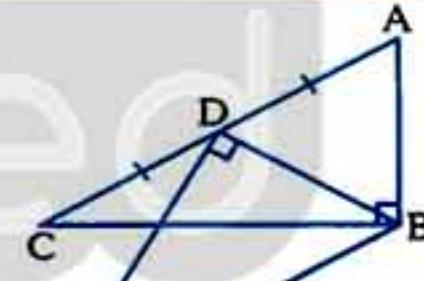
4 [a] In the opposite figure :

$m(\angle ABC) = m(\angle BDE) = 90^\circ$

,  $m(\angle E) = 30^\circ$

, D is the midpoint of  $\overline{AC}$

Prove that :  $AC = BE$

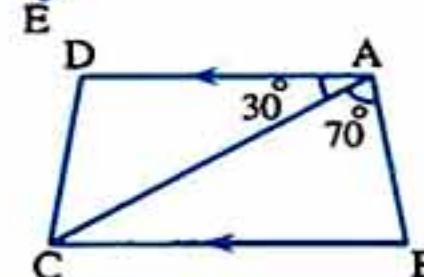


[b] In the opposite figure :

$\overrightarrow{AD} \parallel \overrightarrow{BC}$ ,  $m(\angle BAC) = 70^\circ$

,  $m(\angle DAC) = 30^\circ$

Prove that :  $AC > BC$



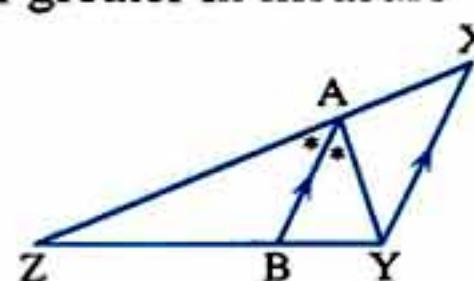
5 [a] Complete :

If the measures of two angles of a triangle are different, then their greater in measure is opposite to .....

[b] In the opposite figure :

$\overrightarrow{AB} \parallel \overrightarrow{XY}$  and  $\overrightarrow{AB}$  bisects  $\angle YAZ$

Prove that :  $XZ > YZ$



## Geometry

## Model for the merge students

Answer the following questions :

## 1 Complete each of the following :

- 1 The point of concurrence of the medians of the triangle divides each median in the ratio ..... : ..... from the base.
- 2 In the right-angled triangle , the length of the median drawn from the vertex of the right angle equals .....
- 3 The base angles of the isosceles triangle are .....
- 4 In  $\triangle ABC$  :  $m(\angle B) = 70^\circ$  ,  $m(\angle C) = 50^\circ$  , then  $AC \dots AB$
- 5 The median of the isosceles triangle from the vertex angle ..... , .....

## 2 Choose the correct answer from those given :

- 1 If  $ABC$  is an equilateral triangle , then  $m(\angle B) = \dots$ 
  - (a)  $30^\circ$
  - (b)  $60^\circ$
  - (c)  $70^\circ$
  - (d)  $90^\circ$
- 2 The length of the side opposite to the angle of measure  $30^\circ$  in the right-angled triangle equals ..... the length of the hypotenuse.
  - (a)  $\frac{1}{2}$
  - (b)  $\frac{1}{3}$
  - (c)  $\frac{1}{4}$
  - (d) 2
- 3 If the measure of the vertex angle of an isosceles triangle is  $80^\circ$  , then the measure of one of the base angles equals .....
  - (a)  $60^\circ$
  - (b)  $40^\circ$
  - (c)  $30^\circ$
  - (d)  $50^\circ$
- 4 The number of axes of symmetry of the isosceles triangle is .....
  - (a) 1
  - (b) 2
  - (c) 3
  - (d) zero
- 5 In  $\triangle ABC$  :  $m(\angle A) = 50^\circ$  ,  $m(\angle B) = 60^\circ$  , then the longest side is .....
  - (a)  $\overline{AB}$
  - (b)  $\overline{BC}$
  - (c)  $\overline{AC}$

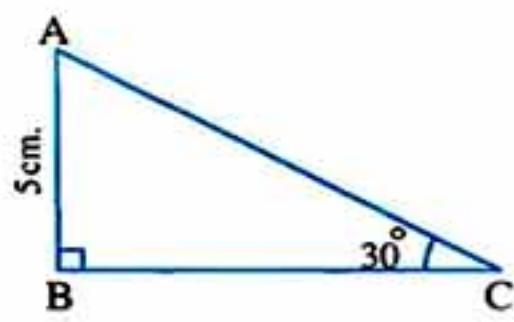
## 3 In the opposite figure , complete :

$\triangle ABC$  is a right-angled triangle at  $B$  ,  $m(\angle C) = 30^\circ$  ,  $AB = 5 \text{ cm}$ .

Find : The length of  $\overline{AC}$

$\therefore m(\angle B) = \dots$  ,  $m(\angle C) = \dots$

$\therefore AB = \frac{1}{2} \times \dots$   $\therefore AC = \dots \text{ cm}$ .



4 [a] In  $\triangle ABC$  :  $m(\angle A) = 40^\circ$  ,  $m(\angle B) = 75^\circ$  ,  $m(\angle C) = 65^\circ$

Arrange the lengths of the sides of the triangle descendingly.

The order is : ..... , ..... , .....

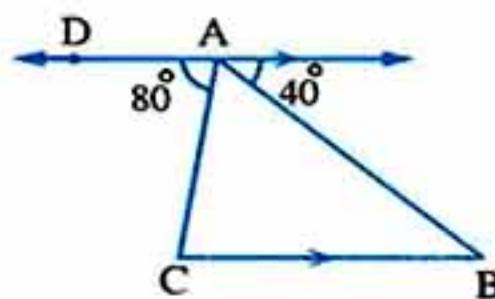
[b] In the opposite figure :

$$\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$$

Complete :

1  $m(\angle B) = \dots \circ$

2 The side ..... is the longest side of  $\triangle ABC$



5 In the opposite figure :

$AB = AC = CD = AD = 10 \text{ cm.}$

,  $m(\angle BAC) = 70^\circ$

Put (✓) or (✗) :

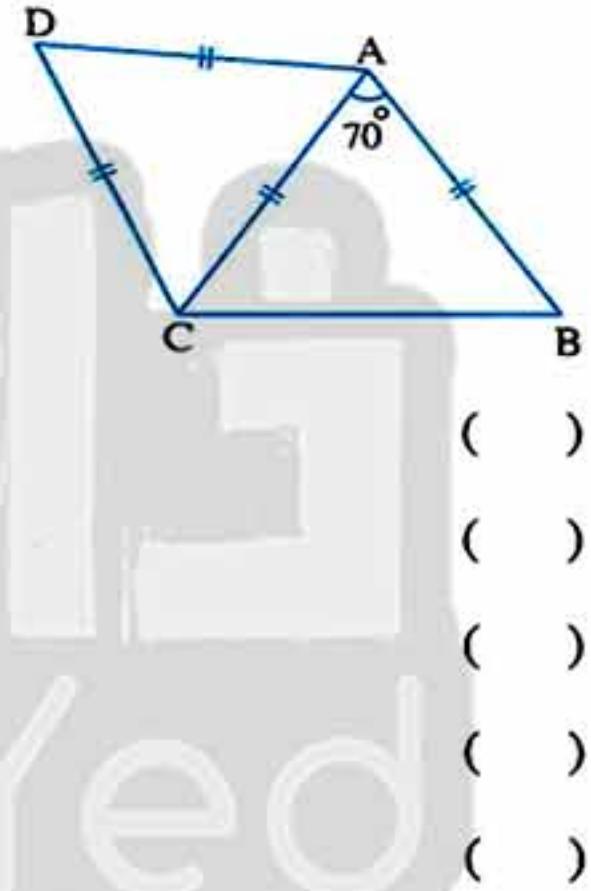
1  $m(\angle B) = 55^\circ$  ( )

2  $m(\angle D) = 70^\circ$  ( )

3  $m(\angle DCB) = 120^\circ$  ( )

4  $AB + AD = 20 \text{ cm.}$  ( )

5  $AB + BC = BC + CD$  ( )



## Some Schools Examinations



on Geometry

1

Cairo Governorate

Centre Cairo Educative Zone  
Saint Joseph College Khoronfish

Answer the following questions :

## 1 Choose the correct answer from the given ones :

1 In  $\triangle ABC$ , if  $AB = 6 \text{ cm.}$  and  $AC = 7 \text{ cm.}$ , then  $BC \in \dots$

(a)  $[6, 13]$  (b)  $[6, 7]$  (c)  $[1, 13]$  (d)  $[1, 7]$

2 The point of intersection of the medians of the triangle divides each of them in the ratio of ..... from the vertex.

(a)  $1 : 2$  (b)  $1 : 3$  (c)  $2 : 1$  (d)  $2 : 3$

3 The measure of any exterior angle of the equilateral triangle equals .....°

(a)  $60^\circ$  (b)  $100^\circ$  (c)  $120^\circ$  (d)  $150^\circ$

4 In  $\triangle ABC$ , if  $\overline{AD}$  is a median,  $M$  is the point of intersection of its medians, then  $AM = \dots AD$

(a)  $\frac{1}{2}$  (b) 2 (c)  $\frac{2}{3}$  (d)  $\frac{3}{2}$

5  $\triangle XYZ$  is an isosceles triangle in which  $m(\angle X) = 110^\circ$ , then  $m(\angle Y) = \dots^\circ$

(a)  $110^\circ$  (b)  $35^\circ$  (c)  $60^\circ$  (d)  $45^\circ$

6 In  $\triangle ABC$ , if  $\overline{AB} \perp \overline{BC}$  and  $AB = BC$ , then  $m(\angle A) = \dots^\circ$

(a)  $30^\circ$  (b)  $45^\circ$  (c)  $60^\circ$  (d)  $90^\circ$

## 2 Complete the following :

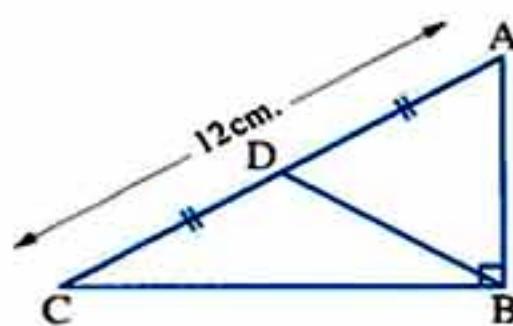
1 The number of axes of symmetry of the equilateral triangle equals .....

2 The base angles in an isosceles triangle are .....

3 The longest side in the right-angled triangle is .....

4 The bisector of the vertex angle of the isosceles triangle .....

5 In the opposite figure :

 $AC = 12 \text{ cm.}$ , then  $BD = \dots \text{ cm.}$ 

3 [a] In  $\triangle ABC$ , if  $m(\angle A) = (6x)^\circ$ ,  $m(\angle B) = (4x - 9)^\circ$

and  $m(\angle C) = 3(x - 2)^\circ$

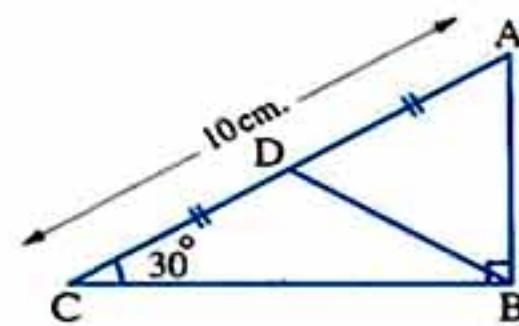
Arrange the side lengths of  $\triangle ABC$  ascendingly.

[b] In the opposite figure :

$m(\angle ABC) = 90^\circ$ ,  $m(\angle C) = 30^\circ$

,  $AD = DC$  and  $AC = 10 \text{ cm}$ .

Find : The perimeter of  $\triangle ABD$



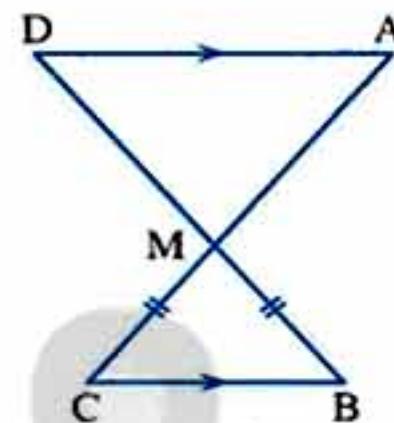
4 [a] In the opposite figure :

If  $\overline{AC} \cap \overline{BD} = \{M\}$

,  $AD \parallel BC$  and  $MB = MC$

, prove that :

$\triangle MAD$  is isosceles.

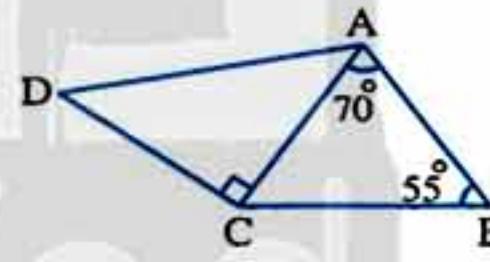


[b] In the opposite figure :

$m(\angle BAC) = 70^\circ$ ,  $m(\angle B) = 55^\circ$

and  $m(\angle ACD) = 90^\circ$

Prove that :  $AD > AB$



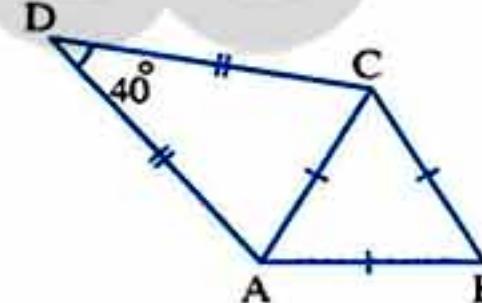
5 [a] In the opposite figure :

$m(\angle D) = 40^\circ$

,  $DA = DC$

and  $\triangle ABC$  is an equilateral triangle.

Find :  $m(\angle DCB)$

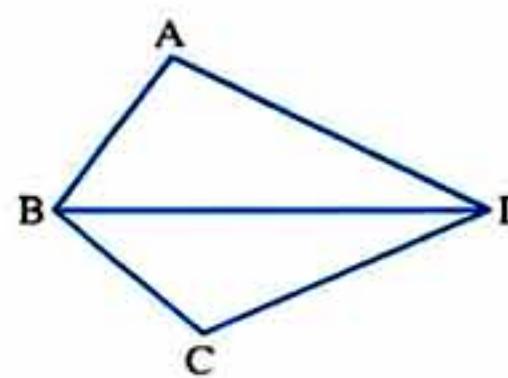


[b] In the opposite figure :

$AB < AD$  and  $BC < CD$

Prove that :

$m(\angle ABC) > m(\angle ADC)$



## Geometry

2

Cairo Governorate

Hadeik El-Kobba Educational Zone

**Answer the following questions :****1 Complete :**

- 1** The median of an isosceles triangle from the vertex angle bisects ..... and is perpendicular to .....
- 2** The measure of the exterior angle at any vertex of the equilateral triangle is .....°.
- 3** The base angles of the isosceles triangle are .....
- 4** ABC is a triangle in which  $AB = 4 \text{ cm.}$ ,  $BC = 6 \text{ cm.}$ , then  $AC \in ]....., .....$ .
- 5** The longest side in the right-angled triangle is .....

**2 Choose the correct answer :**

- 1** In  $\triangle ABC$ , if  $AC = 4 \text{ cm.}$ ,  $BC = 3 \text{ cm.}$ , then  $m(\angle B) \dots m(\angle A)$ 
  - (a) >
  - (b) <
  - (c) =
  - (d) ≤
- 2** The length of the side opposite to the angle of measure  $30^\circ$  in the right-angled triangle equals ..... the length of the hypotenuse.
  - (a) half
  - (b) twice
  - (c) third
  - (d) quarter
- 3** In  $\triangle ABC$ , if  $m(\angle A) = 100^\circ$  and  $AB = AC$ , then  $m(\angle ABC) = .....$ 
  - (a)  $80^\circ$
  - (b)  $60^\circ$
  - (c)  $40^\circ$
  - (d)  $30^\circ$
- 4** The point of intersection of the medians of the triangle divides each of them in the ratio ..... from the base.
  - (a)  $1 : 3$
  - (b)  $3 : 1$
  - (c)  $1 : 2$
  - (d)  $2 : 1$
- 5** If  $\triangle ABD$  is obtuse-angled at B and C is the midpoint of  $\overline{BD}$ , then the longest side is .....
  - (a)  $\overline{AB}$
  - (b)  $\overline{AC}$
  - (c)  $\overline{AD}$
  - (d)  $\overline{BD}$
- 6** The triangle whose side lengths are  $2 \text{ cm.}$ ,  $(x + 3) \text{ cm.}$  and  $5 \text{ cm.}$  becomes an isosceles triangle when  $x = .....$  cm.
  - (a) 1
  - (b) 2
  - (c) 3
  - (d) 4

## Final Examinations

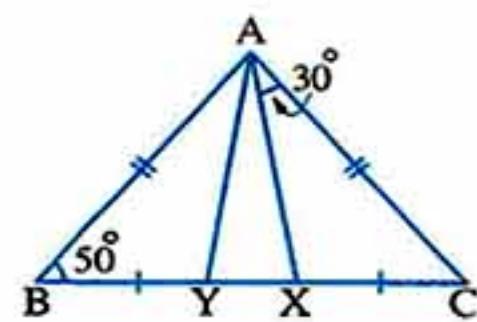
## 3 [a] In the opposite figure :

$\triangle ABC$  is a triangle,  $AB = AC$ ,  $XC = YB$

,  $m(\angle B) = 50^\circ$ ,  $m(\angle CAX) = 30^\circ$

1 Prove that :  $\triangle AXY$  is an isosceles triangle.

2 Find :  $m(\angle AYB)$

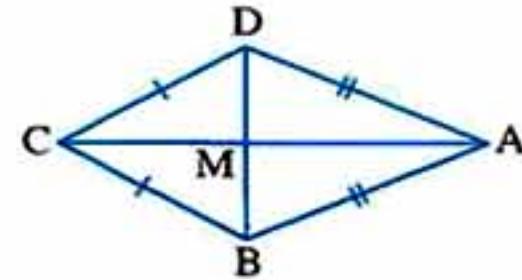


## [b] In the opposite figure :

$$\overline{BD} \cap \overline{AC} = \{M\}$$

,  $AB = AD$  and  $BC = DC$

Prove that : M is the midpoint of  $\overline{BD}$

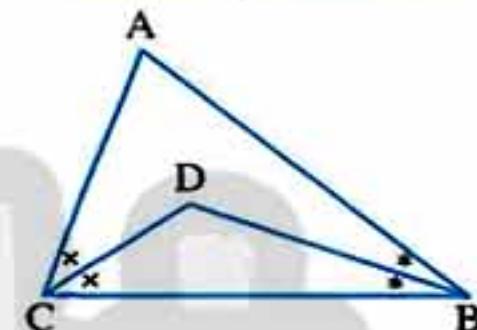


## 4 [a] In the opposite figure :

$\triangle ABC$  is a triangle in which  $AB > AC$ ,  $\overrightarrow{BD}$  bisects  $\angle ABC$

,  $\overrightarrow{CD}$  bisects  $\angle ACB$

Prove that :  $BD > CD$

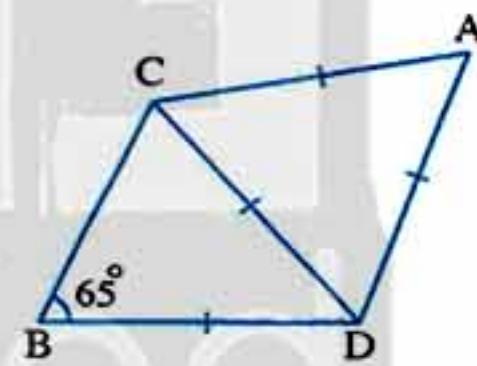


## [b] In the opposite figure :

$$AD = DC = AC = BD$$

,  $m(\angle B) = 65^\circ$

Find with proof :  $m(\angle BDA)$



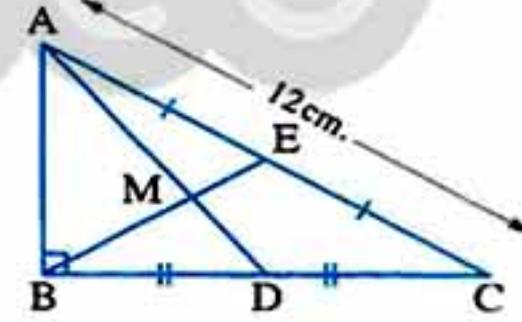
## 5 [a] In the opposite figure :

$\triangle ABC$  is right-angled at B

, E and D are the midpoints of  $\overline{AC}$  and  $\overline{BC}$  respectively

,  $AC = 12 \text{ cm.}$

Find the length of each of :  $\overline{BE}$  and  $\overline{ME}$



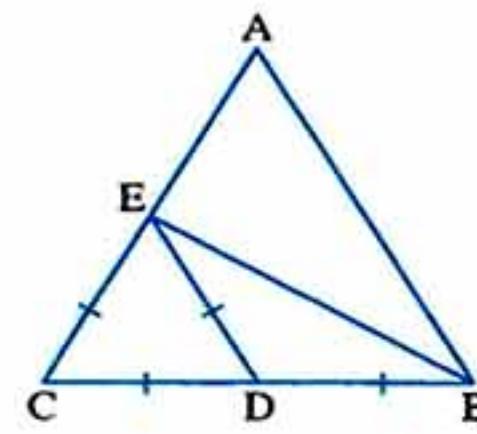
## [b] In the opposite figure :

$\triangle ABC$  is a triangle,  $D \in \overline{BC}$  and  $E \in \overline{AC}$

such that  $BD = CD = CE = DE$

Prove that : 1  $BC > BE$

2  $AB + BD > AE$



Geometry

3

Cairo Governorate

Rod El-Farag Educational Zone  
S.T. Maru's School



***Answer the following questions :***

**1** Choose the correct answer from the given ones :

## 2 Complete :

**1** If the measures of two angles of a triangle are different , then the greater in measure is opposite to .....

**2** The bisector of the vertex angle of the isosceles triangle ..... , .....

**3** The base angles of the isosceles triangle are .....

**4** In any triangle , the sum of the lengths of any two sides ..... the length of the third side.

**5**  $\triangle ABC$  is right-angled at B ,  $m(\angle A) = 30^\circ$  ,  $AC = 10 \text{ cm.}$  , then  $CB = \dots \text{ cm.}$

---

**3** **[a]** ABC is a triangle in which  $AB = AC$  ,  $\overrightarrow{BD}$  bisects  $\angle ABC$  ,  $\overrightarrow{CD}$  bisects  $\angle ACB$  ,  $\overrightarrow{BD} \cap \overrightarrow{CD} = \{D\}$  Prove that :  $\triangle DBC$  is an isosceles triangle.

## Final Examinations

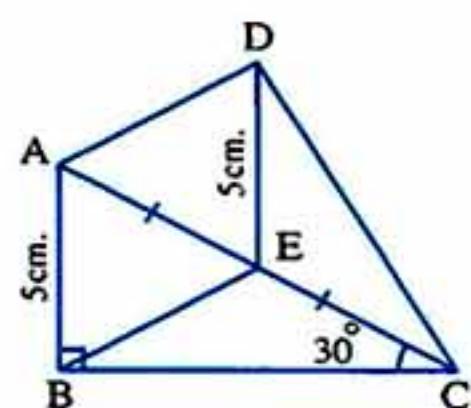
## [b] In the opposite figure :

ABC is a right-angled triangle at B

,  $m(\angle ACB) = 30^\circ$  , AB = 5 cm.

, E is the midpoint of  $\overline{AC}$  , if DE = 5 cm.

, prove that :  $m(\angle ADC) = 90^\circ$



## 4 [a] In the opposite figure :

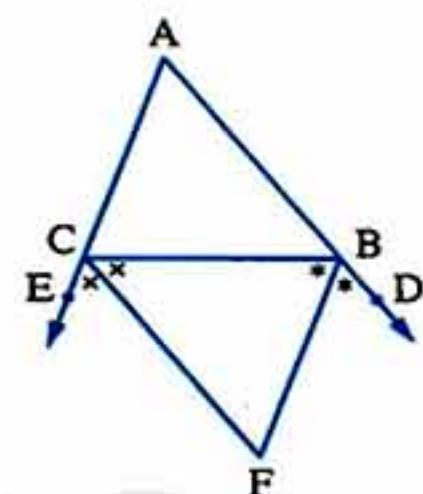
ABC is a triangle in which  $AB > AC$  ,  $D \in \overrightarrow{AB}$  ,  $E \in \overrightarrow{AC}$

,  $\overrightarrow{BF}$  bisects  $\angle DBC$  ,  $\overrightarrow{CF}$  bisects  $\angle BCE$

,  $\overrightarrow{BF} \cap \overrightarrow{CF} = \{F\}$

Prove that : 1  $m(\angle FBC) > m(\angle BCF)$

2  $CF > BF$

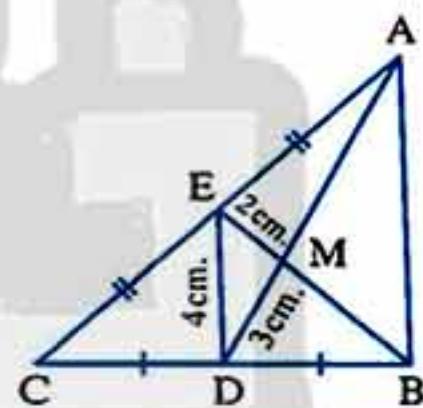


## [b] In the opposite figure :

ABC is a triangle in which  $ME = 2$  cm. ,  $MD = 3$  cm.

,  $DE = 4$  cm. , D and E are the midpoints of  $\overline{BC}$  ,  $\overline{AC}$  respectively

Find : The perimeter of  $\triangle MAB$

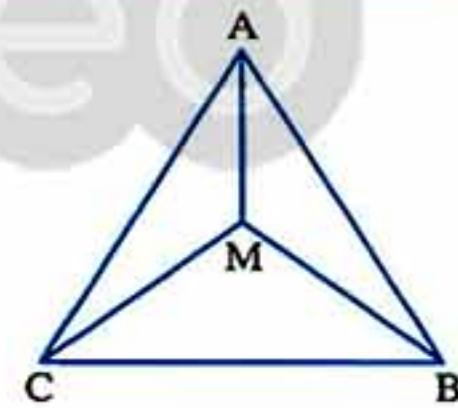


## 5 [a] In the opposite figure :

ABC is a triangle in which

M is a point inside it.

Prove that :  $MA + MB + MC > \frac{1}{2}$  the perimeter of  $\triangle ABC$



## [b] In the opposite figure :

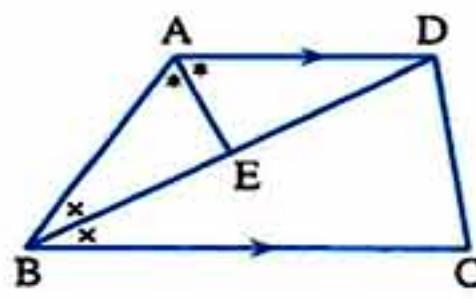
ABCD is a quadrilateral in which  $\overline{AD} \parallel \overline{BC}$

,  $\overrightarrow{BD}$  bisects  $\angle ABC$  ,  $\overrightarrow{AE}$  bisects  $\angle BAD$

Prove that : 1  $AB = AD$

2  $\overline{AE} \perp \overline{BD}$

3  $BE = ED$



## Geometry

4

Giza Governorate

Boulaq El Dakrour Directorate of Education  
Dar El-Hanan Lang. Sch. for Girls

Answer the following questions :

## 1 Choose the correct answer :

1 The number of axes of symmetry of the isosceles triangle equals .....  
 (a) 3      (b) 2      (c) 1      (d) 0

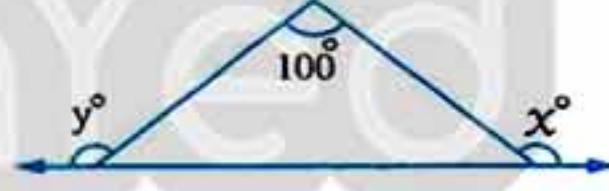
2 The point of intersection of the medians of the triangle divides each of them in the ratio of ..... from the base.  
 (a) 2 : 1      (b) 3 : 1      (c) 3 : 2      (d) 1 : 2

3  $\triangle XYZ$  is right-angled at Y , then  $XZ \dots YZ$   
 (a)  $>$       (b)  $<$       (c)  $=$       (d)  $\leq$

4 If 10 cm. , 5 cm. and  $x$  cm. are side lengths of an isosceles triangle , then  $x = \dots$   
 (a) 10      (b) 5      (c) 15      (d) 4

5 The measure of the exterior angle of an equilateral triangle equals .....°  
 (a) 30      (b) 60      (c) 90      (d) 120

6 In the opposite figure :  
 $x + y = \dots$   
 (a)  $100^\circ$       (b)  $140^\circ$       (c)  $180^\circ$       (d)  $280^\circ$



## 2 Complete the following :

1 In  $\triangle ABC$  , if  $m(\angle B) = 70^\circ$  ,  $m(\angle C) = 50^\circ$  , then  $AC \dots AB$

2 In  $\triangle ABC$  , if  $m(\angle A) = m(\angle B) + m(\angle C)$  , then the longest side is .....

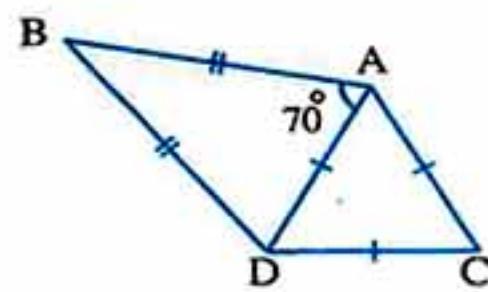
3 The axis of symmetry of a line segment is the straight line which ..... from its midpoint.

4 ABC is a triangle in which  $AB = 4$  cm. ,  $CB = 7$  cm.  
 , then  $AC \in ] \dots , \dots [$

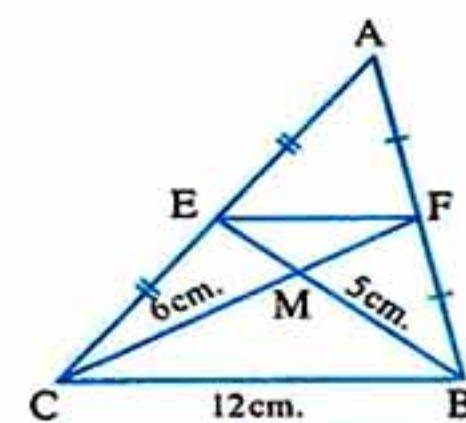
5 If  $\overline{AD}$  is a median in  $\triangle ABC$  , and M is the point of intersection of its medians and  $AM = 12$  cm. , then  $AD = \dots$

Final Examinations

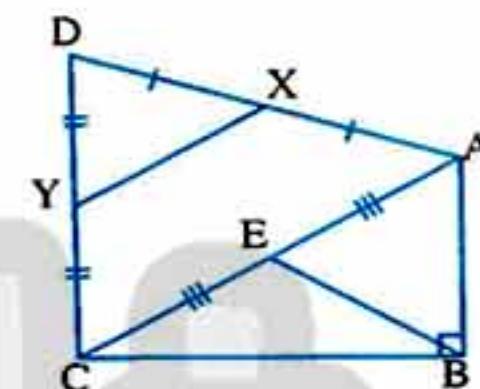
## 3 [a] In the opposite figure :

 $AB = BD$ ,  $m(\angle BAD) = 70^\circ$ ,  $\triangle ADC$  is an equilateral triangle.Find :  $m(\angle BDC)$ 

## [b] In the opposite figure :

ABC is a triangle, F and E are the midpoints of  $\overline{AB}$  and  $\overline{AC}$  respectively.If  $BM = 5 \text{ cm.}$ ,  $CM = 6 \text{ cm.}$ ,  $BC = 12 \text{ cm.}$ , then find : The perimeter of  $\triangle MEF$ 

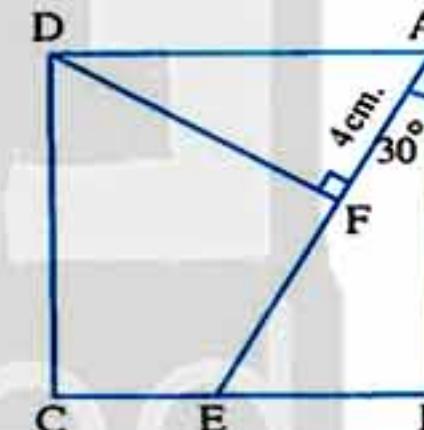
## 4 [a] In the opposite figure :

 $m(\angle ABC) = 90^\circ$ , E is the midpoint of  $\overline{AC}$ and X, Y are the midpoints of  $\overline{DA}$  and  $\overline{DC}$ Prove that :  $XY = BE$ 

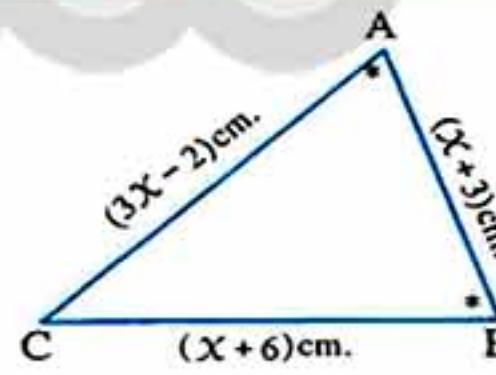
## [b] In the opposite figure :

ABCD is a square,  $E \in \overline{BC}$ where  $m(\angle BAE) = 30^\circ$  and  $\overline{DF} \perp \overline{AE}$ , if  $AF = 4 \text{ cm.}$ 

, calculate : The area of the square ABCD

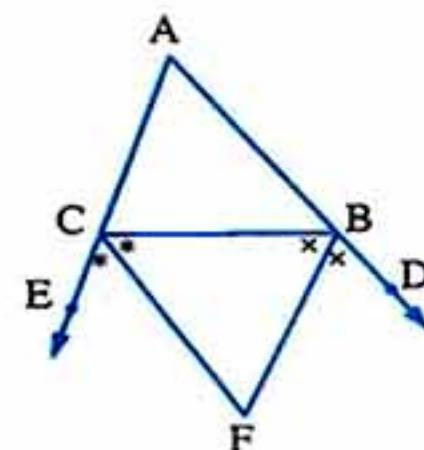


## 5 [a] In the opposite figure :

 $m(\angle A) = m(\angle B)$ Find : The perimeter of  $\triangle ABC$ 

## [b] In the opposite figure :

ABC is a triangle in which :

 $AB > AC$ ,  $D \in \overline{AB}$ ,  $E \in \overline{AC}$ ,  $\overrightarrow{BF}$  bisects  $\angle DBC$ ,  $\overrightarrow{CF}$  bisects  $\angle BCE$ ,  $\overrightarrow{BF} \cap \overrightarrow{CF} = \{F\}$ Prove that : 1  $m(\angle FBC) > m(\angle BCF)$ 2  $CF > BF$ 

## Geometry

5

Giza Governorate

6<sup>th</sup> October Directorate  
Om El-Moamneen Lang. School

Answer the following questions :

## 1 Choose the correct answer :

**1** If ABC is an isosceles triangle ,  $m(\angle A) = 60^\circ$  ,  $AB = 4 \text{ cm}$ .  
, then its perimeter = ..... cm.  
(a) 4      (b) 12      (c) 6      (d) 9

**2** XYZ is a triangle in which  $m(\angle Z) = 70^\circ$  ,  $m(\angle Y) = 60^\circ$  , then  $YZ \dots XY$   
(a)  $>$       (b)  $<$       (c)  $=$       (d)  $\geq$

**3** In  $\triangle ABC$  , if  $m(\angle B) = 90^\circ$  , then the longest side is .....  
(a)  $\overline{BC}$       (b)  $\overline{AB}$       (c)  $\overline{AC}$       (d) its median.

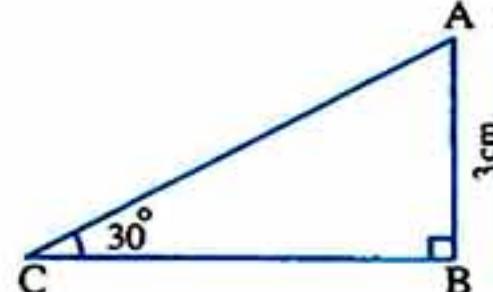
**4** A triangle has one axis of symmetry , the lengths of two sides are 4 cm. and 8 cm.  
, then the length of the third side is ..... cm.  
(a) 3      (b) 6      (c) 4      (d) 8

**5** The point of intersection of the medians of the triangle divides each of the medians in the ratio ..... from the base.  
(a) 2 : 1      (b) 3 : 2      (c) 2 : 4      (d) 3 : 4

**6** If the length of any side of a triangle =  $\frac{1}{3}$  the perimeter of the triangle , then the number of axes of symmetry of the triangle equals .....  
(a) 3      (b) 1      (c) 2      (d) zero

## 2 Complete :

**1** The bisector of the vertex angle of the isosceles triangle ..... and .....

**2** In the opposite figure :The length of  $\overline{AC} =$  .....

**3** In  $\triangle ABC$  ,  $m(\angle A) = m(\angle B) = m(\angle C)$  , then the measure of the exterior angle equals .....

**4** If the lengths of two sides of a triangle are 4 cm. , 7 cm. , then the length of the third side belongs to ] ..... , ..... [

**5** If  $\angle X$  and  $\angle Y$  are two supplementary angles ,  $\angle X \equiv \angle Y$  , then  $m(\angle X) = \dots^\circ$

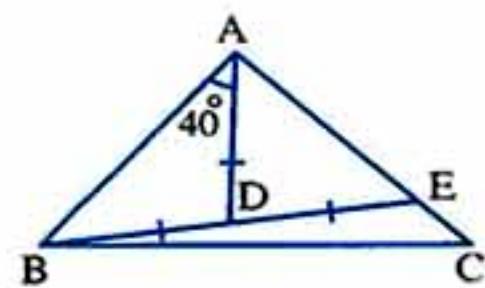
Final Examinations

## 3 [a] In the opposite figure :

$$AD = BD = ED, m(\angle DAB) = 40^\circ$$

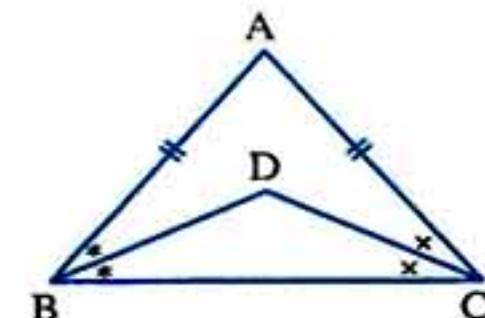
Prove that :

1  $AD < AB$       2  $BC > AC$



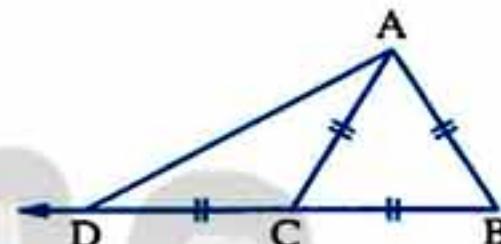
## [b] In the opposite figure :

$$AB = AC, \overrightarrow{BD} \text{ bisects } \angle ABC$$

and  $\overrightarrow{CD}$  bisects  $\angle ACB$ Prove that :  $\triangle DBC$  is an isosceles triangle.4 [a] ABC is a triangle in which  $m(\angle A) = (6x)^\circ$ ,  $m(\angle B) = (4x - 9)^\circ$  $, m(\angle C) = 3(x - 2)^\circ$ . Arrange the lengths of the sides of the triangle ascendingly.

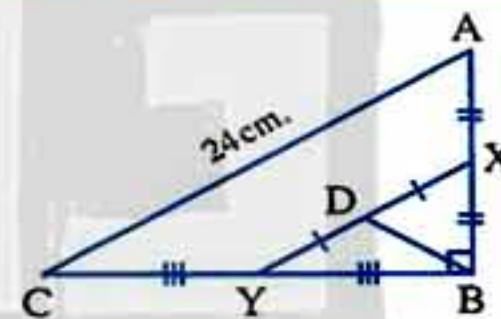
## [b] In the opposite figure :

$$AB = AC = CB = CD$$

Prove that :  $\overline{AB} \perp \overline{AD}$ 

## 5 [a] In the opposite figure :

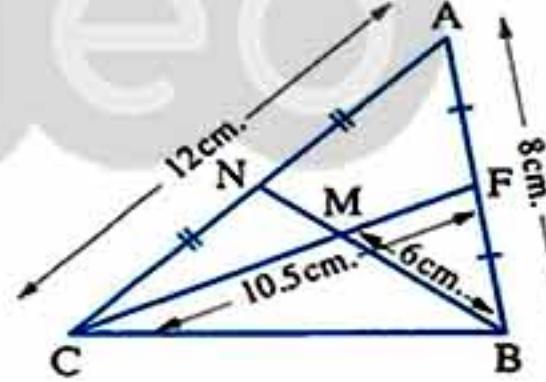
$$m(\angle ABC) = 90^\circ, X \text{ is the midpoint of } \overline{AB}$$

 $, Y$  is the midpoint of  $\overline{BC}$  $, D$  is the midpoint of  $\overline{XY}$ ,  $AC = 24$  cm.Find : The length of  $\overline{BD}$ 

## [b] In the opposite figure :

F and N are the midpoints of  $\overline{AB}$  and  $\overline{AC}$  respectively $, AB = 8$  cm.,  $AC = 12$  cm.,  $BM = 6$  cm. $, CF = 10.5$  cm.

Find : The perimeter of the figure AFMN



## 6 Alexandria Governorate

Middle Educational Zone  
Math Supervision

Answer the following questions :

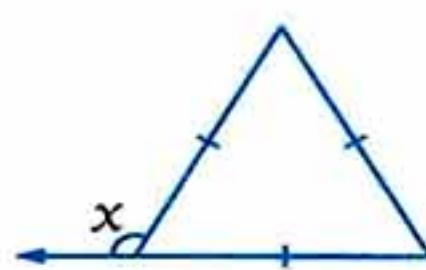
## 1 Complete each of the following :

1 If  $m(\angle A) = 65^\circ$ , then  $m(\text{complementary } \angle A) = \dots^\circ$   
 2 In  $\triangle ABC$ ,  $m(\angle A) = 50^\circ$ ,  $m(\angle C) = 80^\circ$ , then  $CB = \dots$

## Geometry

**3 In the opposite figure :**

$$x = \dots \circ$$

**4 The number of axes of symmetry for the rectangle equals .....****5 In  $\Delta ABC$ ,  $m(\angle B) = 70^\circ$ ,  $m(\angle C) = 45^\circ$ , then  $BC \dots AC$** **6 The medians of the triangle are .....****2 Choose the correct answer :****1 The sum of lengths of two sides in a triangle is ..... the length of the third side.**

(a) >      (b) <      (c) =      (d) twice

**2 The triangle which has no axis of symmetry is .....**

(a) scalene.      (b) isosceles.      (c) equilateral.      (d) right-angled.

**3 The numbers which can not be side lengths of a triangle are .....**

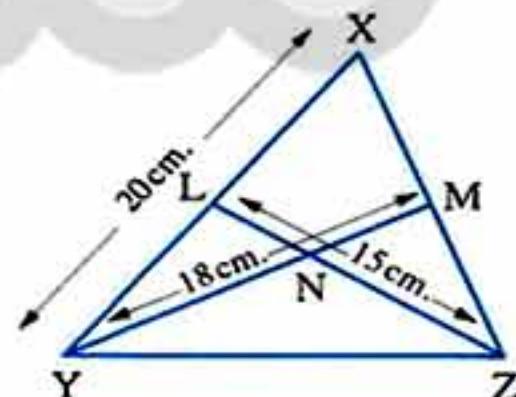
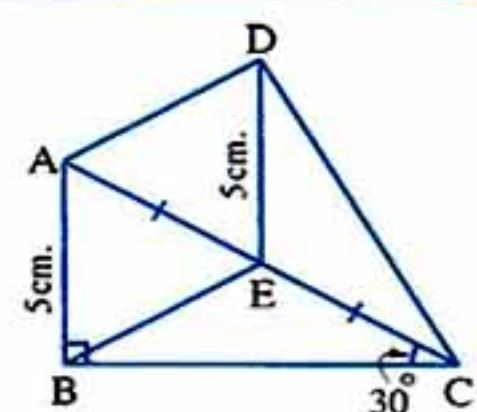
(a) 3, 3, 3      (b) 3, 3, 4      (c) 3, 3, 5      (d) 3, 3, 6

**4  $\overline{BE}$  is a median in  $\Delta ABC$ , M is the point of concurrence of the medians****If  $BM = 6 \text{ cm.}$ , then  $ME = \dots \text{ cm.}$** 

(a) 2      (b) 3      (c) 4      (d) 9

**5 The angle whose measure is  $180^\circ$  is called ..... angle.**

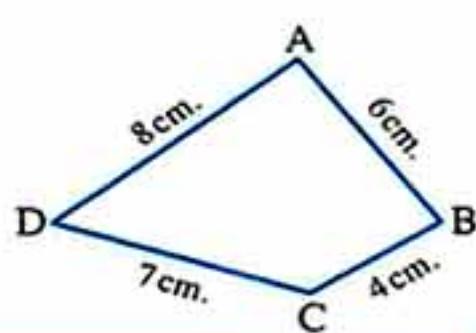
(a) an acute      (b) an obtuse      (c) a straight      (d) a reflex

**3 [a]  $\Delta ABC$  is right-angled at B, if  $m(\angle A) = 75^\circ$ , arrange the lengths of its sides descendingly.****[b] In the opposite figure :****N is the point of concurrence of****the medians of  $\Delta XYZ$** **,  $LZ = 15 \text{ cm.}$ ,  $YM = 18 \text{ cm.}$ ,  $XY = 20 \text{ cm.}$** **Find : The perimeter of  $\Delta NLY$** **4 [a] In the opposite figure :** **$m(\angle ABC) = 90^\circ$ , E is the midpoint of  $\overline{AC}$** **,  $m(\angle ACB) = 30^\circ$** **,  $AB = DE = 5 \text{ cm.}$** **Prove that :  $m(\angle ADC) = 90^\circ$** 

## Final Examinations

[b] In the opposite figure :

Prove that :  $m(\angle BCD) > m(\angle BAD)$



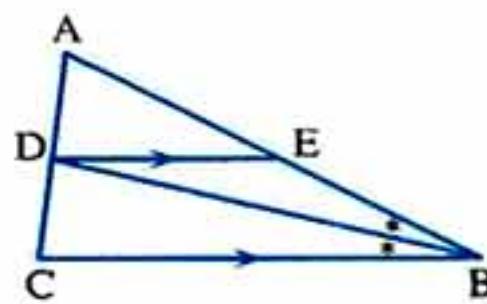
5 [a] In the opposite figure :

$\overrightarrow{BD}$  bisects  $\angle ABC$

,  $\overline{DE} \parallel \overline{BC}$

Prove that :

$\triangle EBD$  is an isosceles triangle.

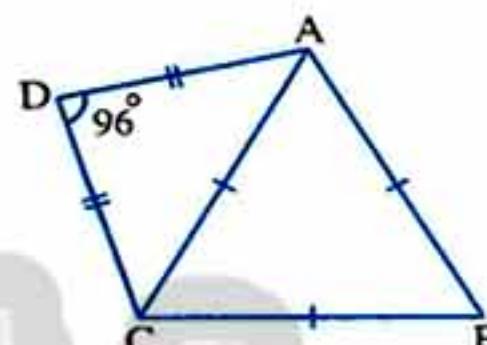


[b] In the opposite figure :

$\triangle ABC$  is equilateral ,  $DA = DC$

,  $m(\angle ADC) = 96^\circ$

Find :  $m(\angle DAB)$



7

Alexandria Governorate

Agamy Educational Zone  
Inspector of Maths



Answer the following questions :

1 Choose the correct answer :

- 1 XYZ is a triangle in which  $m(\angle Z) = 70^\circ$  ,  $m(\angle Y) = 60^\circ$  , then YZ ..... XY
  - (a) >
  - (b) <
  - (c) =
  - (d) twice
- 2 The two diagonals are perpendicular in the .....
  - (a) rectangle.
  - (b) rhombus.
  - (c) trapezium.
  - (d) triangle.
- 3 The measure of the exterior angle of the equilateral triangle equals .....°
  - (a) 360
  - (b) 120
  - (c) 60
  - (d) 180
- 4 If the lengths of two sides in an isosceles triangle are 3 cm. , 7 cm. , then the length of the third side is ..... cm.
  - (a) 3
  - (b) 7
  - (c) 10
  - (d) 4
- 5 The point of concurrence of the medians of the triangle divides each median in the ratio ..... from its base.
  - (a) 2 : 1
  - (b) 1 : 3
  - (c) 1 : 4
  - (d) 1 : 2
- 6 If the side length of an equilateral triangle is 10 cm. , then its height equals ..... cm.
  - (a) 5
  - (b) 10
  - (c)  $5\sqrt{3}$
  - (d) 30

85

## Geometry

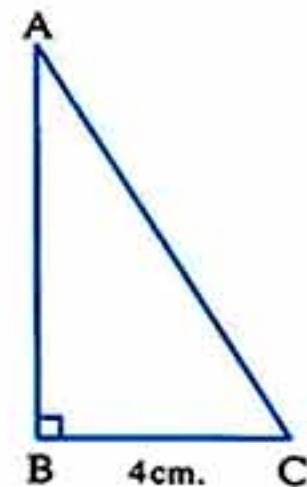
## 2 Complete :

1 If the isosceles triangle has an angle of measure  $45^\circ$  , then the triangle is ..... angled triangle.

2 The sum of lengths of any two sides of a triangle is ..... the length of the third side.

## 3 In the opposite figure :

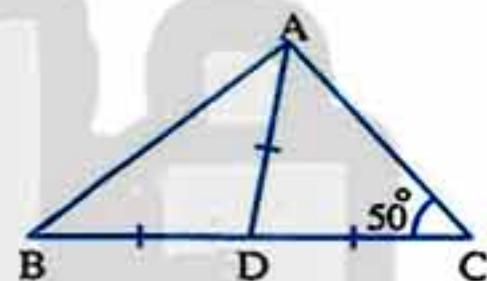
If  $m(\angle C) = 2m(\angle A)$   
 $, CB = 4 \text{ cm.}$   
 $, \text{then } AC = \dots \text{ cm.}$



4 If the two side lengths in a triangle are 4 cm. , 7 cm. , then the length of the third side  $\in ]\dots, \dots[$

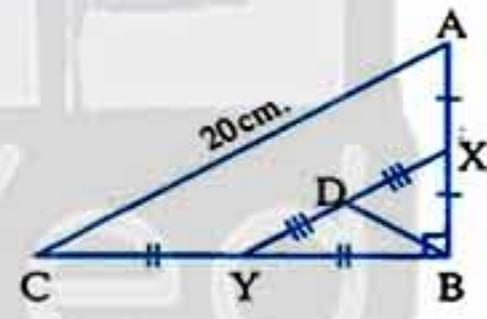
## 5 In the opposite figure :

$AD = DC = BD$   
 $, m(\angle C) = 50^\circ$   
 $, \text{then } m(\angle B) = \dots^\circ$



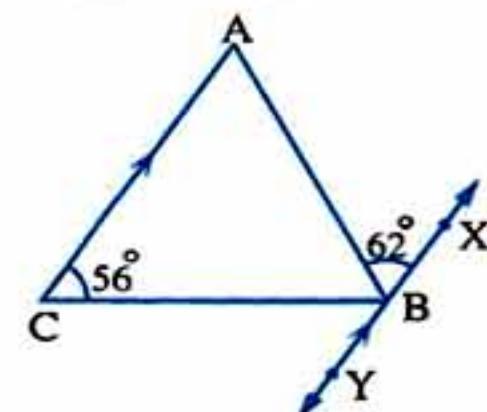
## 3 [a] In the opposite figure :

$m(\angle ABC) = 90^\circ$  , D is the midpoint of  $\overline{XY}$   
 $, X, Y$  are the midpoints of  $\overline{AB}$  ,  $\overline{BC}$  respectively ,  $AC = 20 \text{ cm.}$   
Find : The length of  $\overline{BD}$



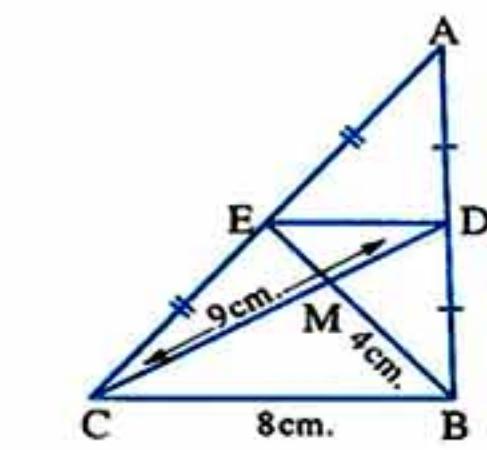
## [b] In the opposite figure :

$B \in \overline{XY}$  ,  $\overline{XY} \parallel \overline{AC}$   
 $, m(\angle ABX) = 62^\circ$   
and  $m(\angle C) = 56^\circ$   
Prove that :  $AC = BC$



## 4 [a] In the opposite figure :

D , E are the midpoints of  $\overline{AB}$  and  $\overline{AC}$  respectively  
 $, DC = 9 \text{ cm.}$  ,  $MB = 4 \text{ cm.}$  and  $BC = 8 \text{ cm.}$   
Find : The perimeter of  $\triangle DME$



## Final Examinations

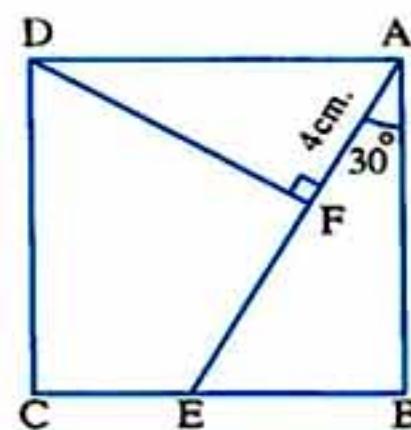
[b] In the opposite figure :

$ABCD$  is a square ,  $E \in \overline{BC}$

, where  $m(\angle BAE) = 30^\circ$  and  $\overline{DF} \perp \overline{AE}$

, if  $AF = 4$  cm.

, calculate : The area of the square  $ABCD$

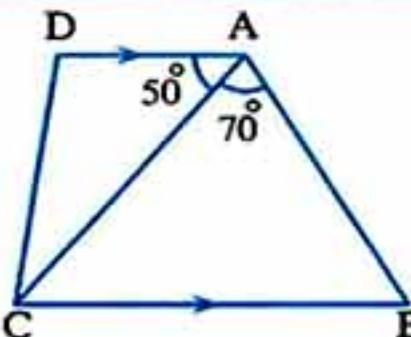


5 [a] In the opposite figure :

$\overline{AD} \parallel \overline{BC}$  ,  $m(\angle CAB) = 70^\circ$

,  $m(\angle DAC) = 50^\circ$

Prove that :  $BC > AC$

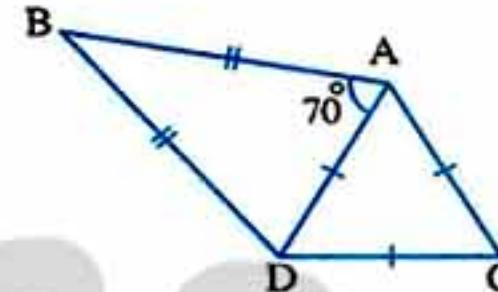


[b] In the opposite figure :

$AB = BD$  ,  $m(\angle BAD) = 70^\circ$

,  $\triangle ADC$  is equilateral

Find :  $m(\angle BDC)$



## 8 El-Kalyoubia Governorate

Directorate of Education  
Inspection of Mathematics



Answer the following questions :

1 Choose the correct answer :

1 ABC is an equilateral triangle , then  $m(\angle A) = \dots^\circ$

(a) 45 (b) 60 (c) 120 (d) 35

2  $\triangle XYZ$  is an isosceles triangle ,  $m(\angle X) = 100^\circ$  , then  $m(\angle Y) = \dots^\circ$

(a) 100 (b) 80 (c) 60 (d) 40

3 The length of the side opposite to the angle of measure  $30^\circ$  in the right-angled triangle equals ..... the length of the hypotenuse.

(a)  $\frac{1}{2}$  (b)  $\frac{2}{3}$  (c)  $\frac{1}{4}$  (d) 2

4 The number of axes of symmetry of the isosceles triangle equals .....

(a) 0 (b) 1 (c) 2 (d) 3

5 If the lengths of two sides of an isosceles triangle are 2 cm. , 5 cm. , then the length of the third side equals ..... cm.

(a) 2 (b) 3 (c) 4 (d) 5

6 In the triangle ABC , if  $m(\angle A) = 50^\circ$  ,  $m(\angle B) = 60^\circ$  , then the longest side is .....

(a)  $\overline{AB}$  (b)  $\overline{BC}$  (c)  $\overline{AC}$  (d) 110 cm.

## Geometry

## 2 Complete :

- 1 The medians of a triangle are .....
- 2 The longest side of the right-angled triangle is the .....
- 3 If  $AB = AC$  in the triangle ABC , then ABC is ..... triangle.
- 4 XYZ is a triangle ,  $m(\angle Z) = 40^\circ$  ,  $m(\angle Y) = 30^\circ$  , then XY ..... XZ
- 5 If the lengths of two sides of a triangle are 6 cm. and 9 cm. , then the length of the third side  $\in ]..... , .....$

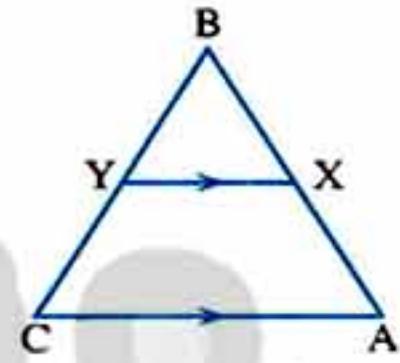
3 [a] In  $\triangle ABC$  ,  $m(\angle A) = 40^\circ$  ,  $m(\angle B) = 75^\circ$  ,  $m(\angle C) = 65^\circ$

Arrange the lengths of the sides of this triangle descendingly.

[b] In the opposite figure :

$$AB = BC, \overline{XY} \parallel \overline{AC}$$

Prove that : BX = BY

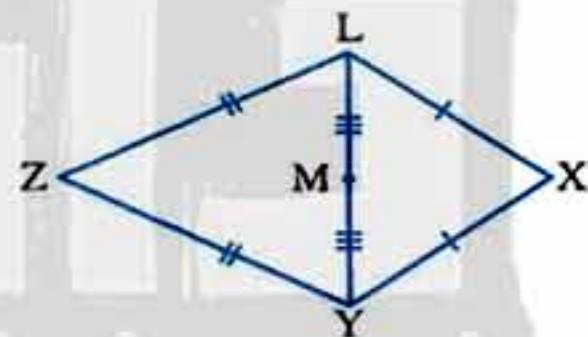


4 [a] In the opposite figure :

$$XY = XL, ZY = ZL$$

$$, LM = MY$$

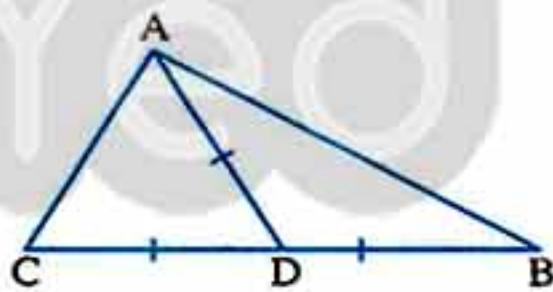
Prove that : X , M , Z are on the same straight line.



[b] In the opposite figure :

$$AB > AC, DB = DC = AD$$

Prove that :  $m(\angle BAD) < m(\angle CAD)$



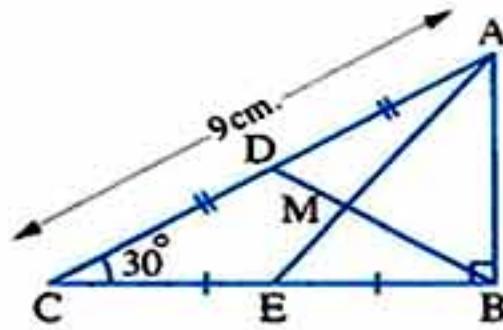
5 [a] In the opposite figure :

$\triangle ABC$  is a right-angled triangle at B

,  $m(\angle C) = 30^\circ$  , D is the midpoint of  $\overline{AC}$

, E is the midpoint of  $\overline{BC}$  ,  $AC = 9\text{ cm}$ .

Find the length of each of :  $\overline{BD}$  ,  $\overline{BM}$  ,  $\overline{AB}$  ,  $\overline{MD}$



[b] ABC is a triangle such that

$$m(\angle A) = (2x)^\circ, m(\angle C) = (x + 40)^\circ, m(\angle B) = (3x - 10)^\circ$$

Prove that : AB = AC

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El-Sharkia Governorate

Zagazig English Language School  
for Girls

Answer the following questions :

## 1 Choose the correct answer :

1 In  $\triangle ABC$ ,  $m(\angle A) = 60^\circ$ ,  $m(\angle C) = 45^\circ$ , then .....  
 (a)  $AB < AC$       (b)  $AB = AC$       (c)  $AB > AC$       (d)  $AB = BC$

2 If M is the point of concurrence of the medians of  $\triangle ABC$ ,  $\overline{AD}$  is a median, then  $MA =$  .....  
 (a)  $2 AD$       (b)  $\frac{2}{3} AD$       (c)  $\frac{3}{2} AD$       (d)  $\frac{1}{2} MD$

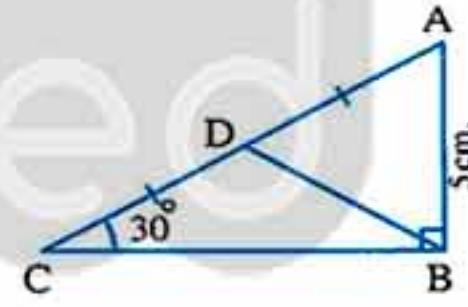
3 In  $\triangle ABC$ ,  $AB = 4 \text{ cm.}$ ,  $BC = 6 \text{ cm.}$ , then  $AC \in$  .....  
 (a)  $[2, 4]$       (b)  $[2, 10]$       (c)  $[2, 10]$       (d)  $[0, 10]$

4 The number of axes of symmetry of the equilateral triangle equals .....  
 (a) zero      (b) 1      (c) 2      (d) 3

5 In  $\triangle ABC$ ,  $AB = AC$ ,  $m(\angle B) = x + 30^\circ$ ,  $m(\angle C) = 2x + 5^\circ$ , then  $x =$  .....  
 (a)  $25^\circ$       (b)  $20^\circ$       (c)  $35^\circ$       (d)  $3^\circ$

## 6 In the opposite figure :

$AD = DC$ ,  $m(\angle C) = 30^\circ$ ,  $m(\angle ABC) = 90^\circ$ ,  $AB = 5 \text{ cm.}$ , then the perimeter of  $\triangle ABD =$  ..... cm.  
 (a) 5      (b) 15      (c) 20      (d) 25



## 2 Complete :

1 ABCD is a rectangle,  $AB = 3 \text{ cm.}$ ,  $BC = 4 \text{ cm.}$ , then  $BD =$  ..... cm.

2 In  $\triangle ABC$ , if D is the midpoint of  $\overline{BC}$  and  $AD = \frac{1}{2} BC$ , then  $m(\angle CAB) =$  .....<sup>°</sup>

3 The longest side in the right-angled triangle is .....  
 4 If  $\triangle ABC \cong \triangle XYZ$ , then  $AC - XZ =$  .....  
 5 The median that is drawn from the vertex angle of an isosceles triangle ..... and .....

## Geometry

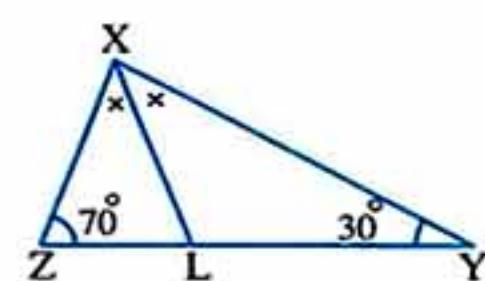
3 [a] In the opposite figure :

$\overrightarrow{XL}$  bisects  $\angle YXZ$ ,  $m(\angle Y) = 30^\circ$

,  $m(\angle Z) = 70^\circ$

1 Find :  $m(\angle LXZ)$  and  $m(\angle XLZ)$

2 Prove that :  $\triangle XLZ$  is an isosceles triangle.

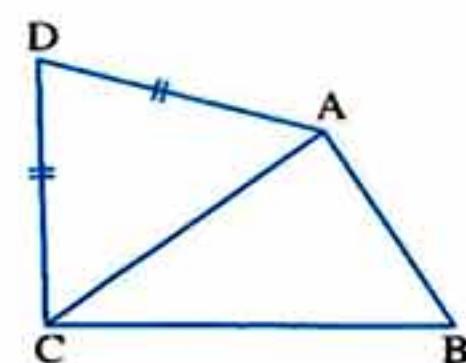


[b] In the opposite figure :

ABCD is a quadrilateral

,  $AD = DC$ ,  $BC > AB$

Prove that :  $m(\angle BAD) > m(\angle BCD)$



4 [a] In the opposite figure :

X is the midpoint of  $\overline{AC}$ ,  $AB = 8 \text{ cm.}$

, Y is the midpoint of  $\overline{BC}$ ,  $AM = 5 \text{ cm.}$ ,  $BX = 6 \text{ cm.}$

Find : The perimeter of  $\triangle XMY$

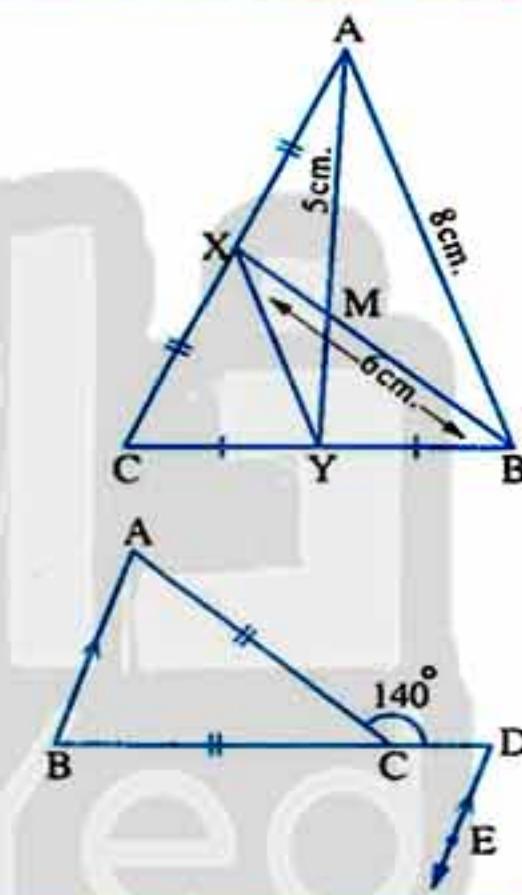
[b] In the opposite figure :

$C \in \overline{BD}$ ,  $CA = CB$

,  $\overrightarrow{AB} \parallel \overrightarrow{DE}$

,  $m(\angle ACD) = 140^\circ$

Find :  $m(\angle A)$  and  $m(\angle BDE)$



5 [a] In the opposite figure :

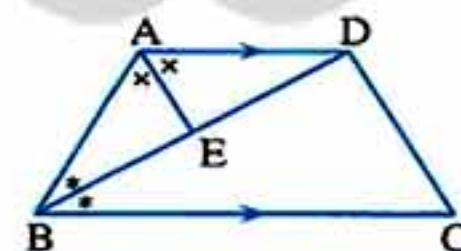
ABCD is a quadrilateral,  $\overrightarrow{AD} \parallel \overrightarrow{BC}$

,  $\overrightarrow{BD}$  bisects  $\angle ABC$

,  $\overrightarrow{AE}$  bisects  $\angle BAD$

Prove that : 1  $AD = AB$

2  $\overrightarrow{AE} \perp \overrightarrow{BD}$



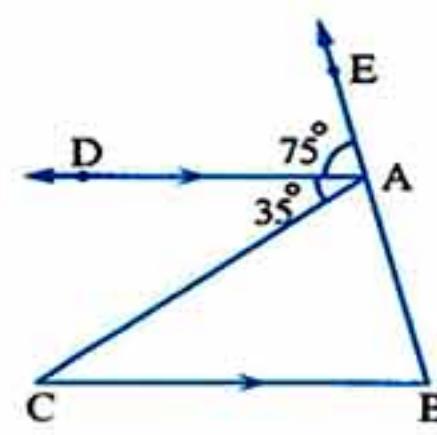
[b] In the opposite figure :

$E \in \overrightarrow{BA}$ ,  $\overrightarrow{AD} \parallel \overrightarrow{BC}$

,  $m(\angle DAE) = 75^\circ$

,  $m(\angle DAC) = 35^\circ$

Prove that :  $BC > AB$



10

El-Monofia Governorate

El-Shohadea Directorate  
Maths Supervision

Answer the following questions :

## 1 Choose the correct answer :

1 The intersecting point of the medians of the triangle divides each median in the ratio of ..... from its base.  
 (a) 1 : 2      (b) 2 : 1      (c) 3 : 1      (d) 1 : 3

2 The number of symmetry axes of the isosceles triangle is .....  
 (a) 1      (b) 2      (c) 3      (d) 4

3 The sum of lengths of any two sides of a triangle ..... the length of the third side.  
 (a) <      (b) >      (c) =      (d) ≈

4 The diagonals are perpendicular in the .....  
 (a) trapezium.      (b) parallelogram.      (c) square.      (d) rectangle.

5 If  $\triangle ABC$  is right-angled at B ,  $AB = 6 \text{ cm.}$  ,  $BC = 8 \text{ cm.}$  , then the length of the median drawn from B equals ..... cm.  
 (a) 3      (b) 4      (c) 5      (d) 6

6 If 4 cm. ,  $(X + 3)$  cm. and 8 cm. are side lengths of an isosceles triangle , then  $X =$  .....  
 (a) 3      (b) 4      (c) 5      (d) 6

## 2 Complete each of the following :

1 The base angles in an isosceles triangle are .....  
 2 If  $m(\angle A) = 100^\circ$  , then  $m(\text{reflex } \angle A) =$  .....  
 3 The number of medians of the isosceles triangle is .....  
 4 In  $\triangle ABC$  , if  $AB > BC$  , then  $m(\angle A) \dots m(\angle C)$   
 5 The bisector of the vertex angle of an isosceles triangle bisects the base and .....

## 3 [a] In the opposite figure :

ABC is a triangle in which D , E are the midpoints of  $\overline{AB}$  ,  $\overline{AC}$  ,  $FC = 4 \text{ cm.}$  ,  $FB = 6 \text{ cm.}$  and  $BC = 8 \text{ cm.}$

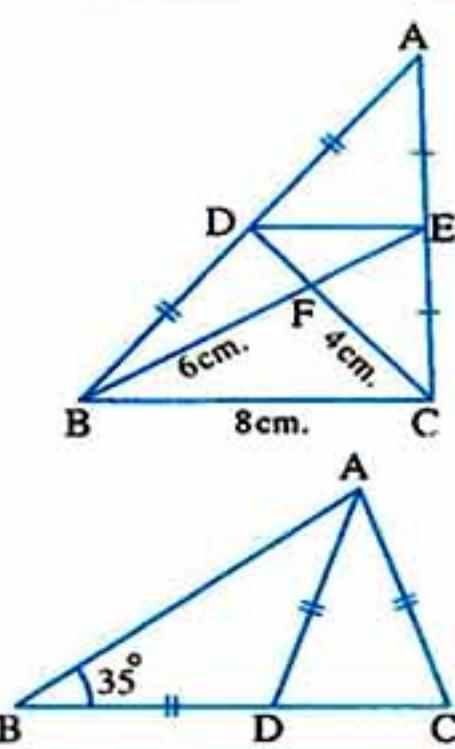
Find : The perimeter of  $\triangle DFE$

## [b] In the opposite figure :

$$AC = AD = BD$$

$$, m(\angle B) = 35^\circ$$

Find :  $m(\angle BAC)$



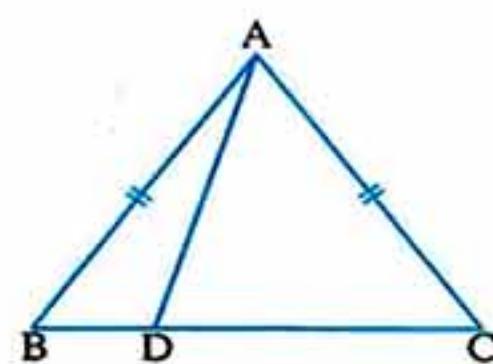
## Geometry

4 [a] In the opposite figure :

$$AC = AB$$

**Prove that :**

$$AB > AD$$



[b] ABC is a triangle in which  $m(\angle A) = 40^\circ$ ,  $m(\angle B) = 80^\circ$ . Arrange the lengths of the sides of the triangle descendingly.

5 In the opposite figure :

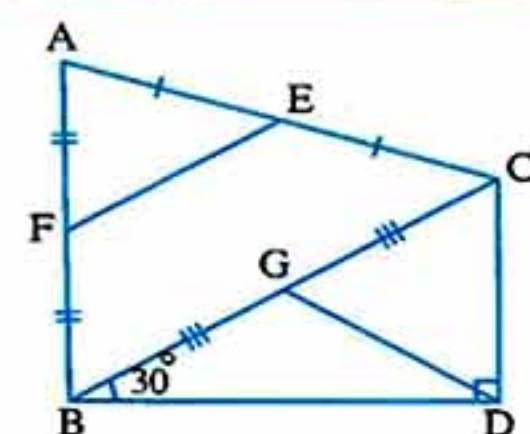
F, E, G are the midpoints of  $\overline{AB}$ ,  $\overline{AC}$ ,  $\overline{BC}$

,  $m(\angle BDC) = 90^\circ$ ,  $m(\angle CBD) = 30^\circ$

,  $BC = 10 \text{ cm}$ .

1 Prove that :  $FE = DC = GD$

2 Find : The perimeter of  $\triangle GCD$



11 El-Dakahlia Governorate

Talkha Educational Directorate  
A.M.D.L School



**Answer the following questions :**

1 Choose the correct answer from the given ones :

1 The numbers  $4$ ,  $x + 4$ ,  $8$  can be lengths of sides of an isosceles triangle if  $x = \dots$

(a)  $4$       (b)  $0$       (c)  $3$       (d)  $8$

2 In  $\triangle LMN$ , if  $m(\angle M) = 55^\circ$ ,  $m(\angle N) = 80^\circ$ , then  $LM \dots MN$

(a)  $<$       (b)  $>$       (c)  $=$       (d) twice

3 The measure of the exterior angle of the equilateral triangle equals  $\dots$

(a)  $30^\circ$       (b)  $60^\circ$       (c)  $90^\circ$       (d)  $120^\circ$

4 If  $\overline{AD}$  is a median of  $\triangle ABC$ , and M is the point of concurrence of the medians, then  $AD = \dots AM$

(a)  $\frac{1}{3}$       (b)  $\frac{2}{3}$       (c)  $\frac{1}{2}$       (d)  $\frac{3}{2}$

5 The base angles of the isosceles triangle are  $\dots$

(a) alternate      (b) corresponding      (c) congruent      (d) supplementary

6 If  $XA = XB$ ,  $YA = YB$ , then  $\overleftrightarrow{XY} \dots \overline{AB}$

(a)  $\perp$       (b)  $\equiv$       (c)  $\parallel$       (d)  $=$

**2 Complete the following :**

- 1** The number of axes of symmetry of the isosceles triangle is .....
- 2** The bisector of the vertex angle of the isosceles triangle .....
- 3** The medians of the triangle intersect at .....
- 4** The longest side in the right-angled triangle is the .....
- 5** In  $\triangle ABC$ , if  $AB = AC$ ,  $m(\angle C) = 40^\circ$ , then  $m(\angle A) = \dots^\circ$

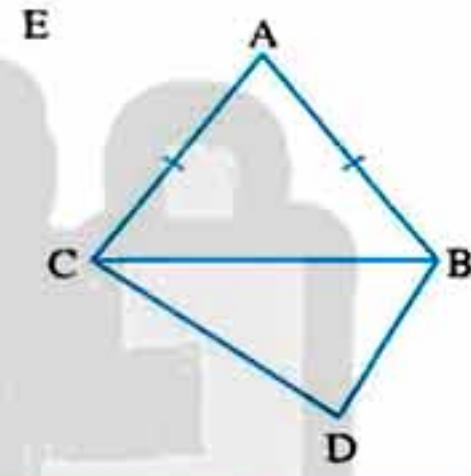
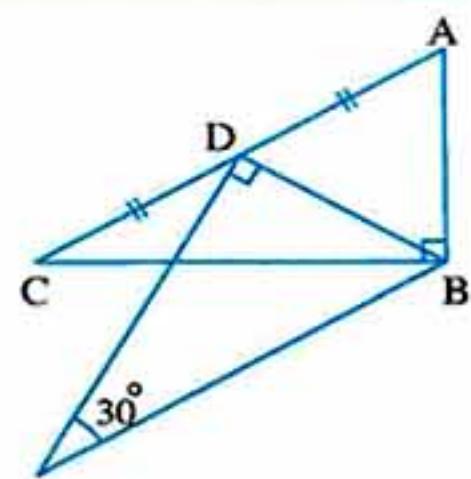
**3 [a] In the opposite figure :**

$$m(\angle ABC) = m(\angle BDE) = 90^\circ$$

$$\text{, } m(\angle E) = 30^\circ$$

, D is the midpoint of  $\overline{AC}$

**Prove that :**  $AC = BE$

**[b] In the opposite figure :**

$$AB = AC, DC > DB$$

**Prove that :**

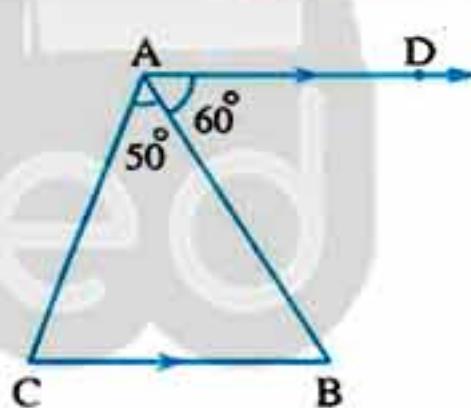
$$m(\angle ABD) > m(\angle ACD)$$

**4 [a] In the opposite figure :**

ABC is a triangle,  $\overrightarrow{AD} \parallel \overrightarrow{CB}$

$$\text{, } m(\angle DAB) = 60^\circ, m(\angle BAC) = 50^\circ$$

**Prove that :**  $AB > AC$

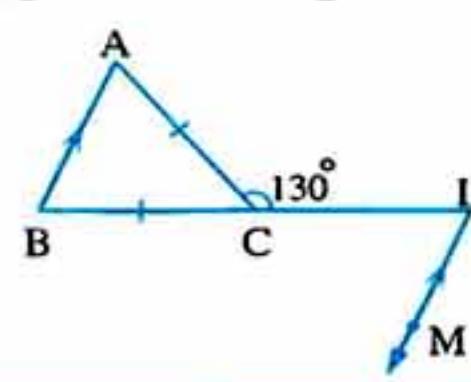
**[b] In the opposite figure :**

$$C \in \overleftrightarrow{LB}, AC = BC$$

$$\text{, } m(\angle LCA) = 130^\circ$$

$\overleftrightarrow{LM} \parallel \overleftrightarrow{AB}$

**Find :**  $m(\angle MLC)$

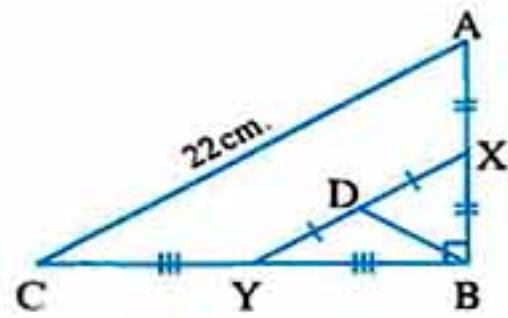
**5 [a] In the opposite figure :**

$$m(\angle ABC) = 90^\circ, X, Y, D$$

are the midpoints of  $\overline{AB}$ ,  $\overline{BC}$ ,  $\overline{XY}$

respectively, if  $AC = 22$  cm.

**find :**  $BD$

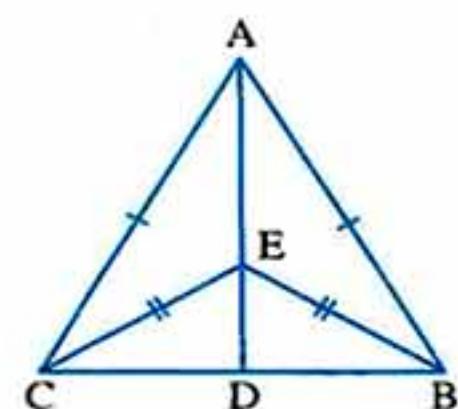


## Geometry

[b] In the opposite figure :

$$AB = AC, EB = EC$$

Prove that :  $BD = CD$



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Suez Governorate

Directorate of Education  
Inspection of Mathematics

Answer the following questions :

1 Complete :

- 1 The base angles in an isosceles triangle are .....
- 2 If the angles of a triangle are congruent , then the triangle is .....
- 3 In  $\triangle ABC$  , if  $m(\angle A) = 70^\circ$  ,  $m(\angle B) = 50^\circ$  , then the longest side is .....
- 4 The point of concurrence of the medians of the triangle divides each median in the ratio of ..... : ..... from its vertex.
- 5 In  $\triangle ABC$  , if  $m(\angle A) = 30^\circ$  and  $m(\angle B) = 90^\circ$  , then  $AC = \dots BC$

2 Choose the correct answer :

- 1 The triangle which has three axes of symmetry is .....

  - (a) scalene. (b) isosceles. (c) right-angled. (d) equilateral.

- 2 If the lengths of two sides in an isosceles triangle are 3 cm. and 7 cm. , then the length of the third side equals ..... cm.

  - (a) 3 (b) 4 (c) 6 (d) 7

- 3 XYZ is a triangle in which  $m(\angle Z) = 70^\circ$  and  $m(\angle Y) = 60^\circ$  , then  $YZ \dots XY$

  - (a)  $>$  (b)  $<$  (c)  $=$  (d) twice

4 In the opposite figure :

$$CA = CB, m(\angle B) = x^\circ$$

$$, m(\angle ACD) = 100^\circ \text{ where } C \in \overline{BD}$$

, then  $x = \dots$

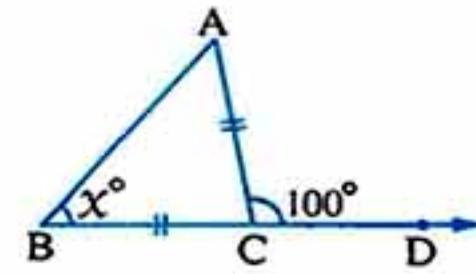
$$(a) 50^\circ \quad (b) 100^\circ \quad (c) 150^\circ \quad (d) 200^\circ$$

5 In  $\triangle ABC$  , if  $AB = AC$  and  $\overline{AD}$  is a median , then  $\overline{AD} \dots \overline{BC}$

$$(a) \equiv \quad (b) \perp \quad (c) \subset \quad (d) //$$

6 In  $\triangle ABC$  , if  $AB = 3 \text{ cm.}$  ,  $BC = 5 \text{ cm.}$  , then  $AC \in \dots$

$$(a) [2, 8[ \quad (b) [2, 7[ \quad (c) [2, 15[ \quad (d) ]8, 15[$$



## Final Examinations

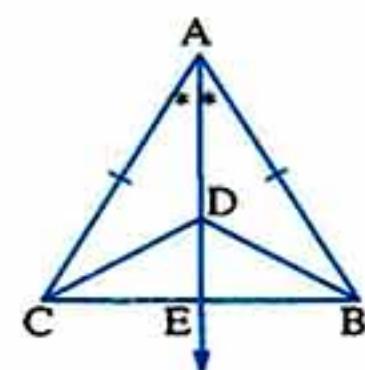
3 [a] ABC is a triangle in which  $m(\angle A) = 40^\circ$ ,  $m(\angle B) = 75^\circ$ . Arrange the lengths of sides of the triangle descendingly.

[b] In the opposite figure :

$$\overline{AB} = \overline{AC}, \overline{AE} \text{ bisects } \angle BAC$$

$$, \overline{AE} \cap \overline{BC} = \{E\}, D \in \overline{AE}$$

Prove that :  $BD = CD$



4 [a] In the opposite figure :

$$\overline{AD} \parallel \overline{BC}, AD = AB$$

$$, m(\angle ABD) = 25^\circ, m(\angle C) = 63^\circ$$

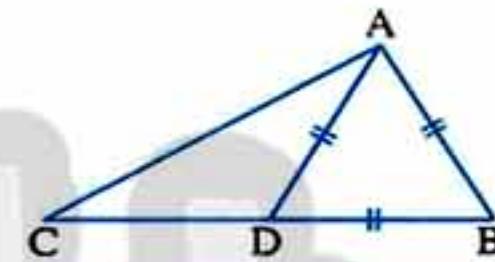
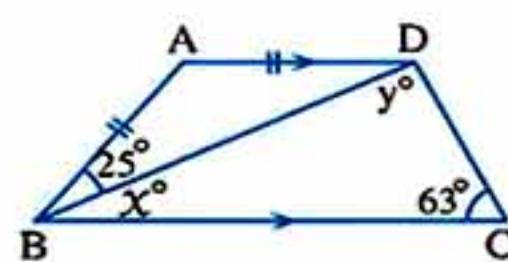
$$, m(\angle DBC) = x^\circ, m(\angle CDB) = y^\circ$$

Find the value of each of : x and y

[b] In the opposite figure :

$$AB = BD = DA$$

Prove that :  $BC > AC$



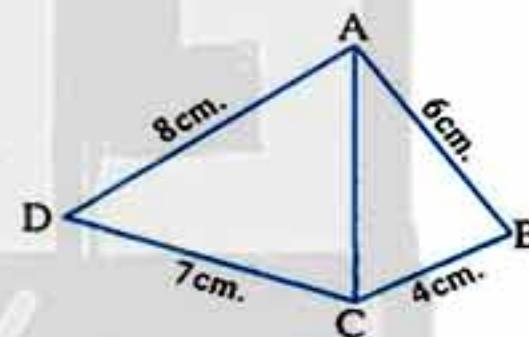
5 [a] In the opposite figure :

$$\text{ABCD is a quadrilateral}$$

$$, AB = 6 \text{ cm.}, BC = 4 \text{ cm.}$$

$$, CD = 7 \text{ cm.}, AD = 8 \text{ cm.}$$

Prove that :  $m(\angle BCD) > m(\angle BAD)$



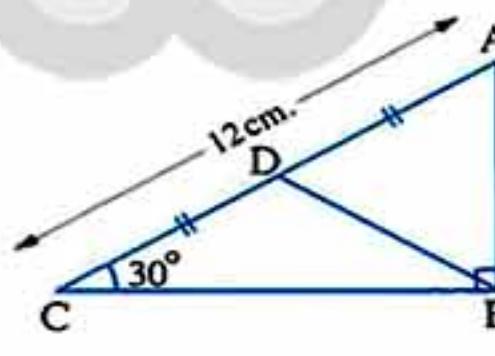
[b] In the opposite figure :

$$\text{ABC is a triangle}, m(\angle ABC) = 90^\circ$$

$$, D \text{ is the midpoint of } \overline{AC}$$

$$, AC = 12 \text{ cm.}, m(\angle C) = 30^\circ$$

$$, \text{then find : The perimeter of } \triangle ABD$$



13

El-Beheira Governorate

Damanhur Directorate  
Al-Farabi Language School



Answer the following questions :

1 Complete the following :

1 The length of the side opposite to the angle of measure  $30^\circ$  in the right-angled triangle equals ..... the length of the hypotenuse.

95

## Geometry

**2** If  $\overline{AD}$  is a median in  $\triangle ABC$ , M is the point of intersection of its medians and  $AM = 12 \text{ cm.}$ , then  $AD = \dots$

**3** The number of axes of symmetry of the isosceles triangle equals .....

**4** In a triangle, if two angles are unequal in measure, then the greater angle in measure is opposite to .....

**5** If  $\overline{AB} \cong \overline{XY}$  and  $AB = 5 \text{ cm.}$ , then  $2AB - XY = \dots$

**2 Choose the correct answer :**

**1** The measure of one of the base angles in the isosceles triangle is  $65^\circ$ , then the measure of its vertex angle equals .....°  
 (a) 65      (b) 50      (c) 130      (d) 55

**2** If 4 cm.,  $(X + 3)$  cm. and 8 cm. are side lengths of an isosceles triangle, then  $X = \dots$   
 (a) 4      (b) 3      (c) 5      (d) 8

**3** If  $\triangle ABC$  is right-angled at B,  $AB = 6 \text{ cm.}$ ,  $BC = 8 \text{ cm.}$ , then the length of the median drawn from B equals ..... cm.  
 (a) 10      (b) 8      (c) 6      (d) 5

**4** The diagonals are perpendicular in the .....  
 (a) trapezium.      (b) parallelogram.      (c) square.      (d) triangle.

**5** The point of concurrence of the medians of the triangle divides each median in the ratio of ..... from the base.  
 (a) 1 : 2      (b) 1 : 3      (c) 2 : 1      (d) 3 : 1

**6** The acute angle supplements ..... angle.  
 (a) an acute      (b) an obtuse      (c) a right      (d) a reflex

**3 [a] In the opposite figure :**

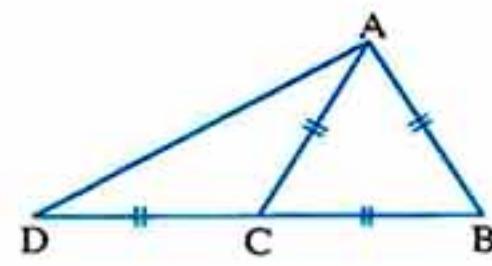
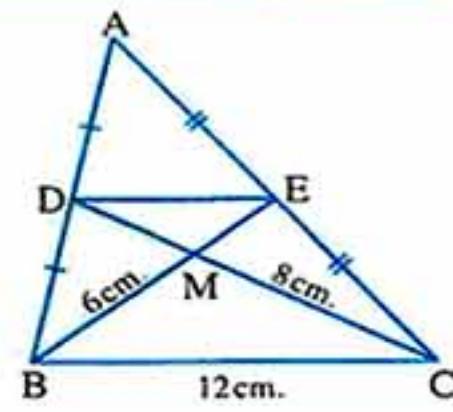
$\overline{BE}$ ,  $\overline{CD}$  are medians in  $\triangle ABC$ ,  
 $MB = 6 \text{ cm.}$ ,  $MC = 8 \text{ cm.}$ ,  
 $BC = 12 \text{ cm.}$

**Find :** The perimeter of  $\triangle MDE$

**[b] In the opposite figure :**

$AB = BC = AC = DC$

**Prove that :**  $m(\angle BAD) = 90^\circ$



## Final Examinations

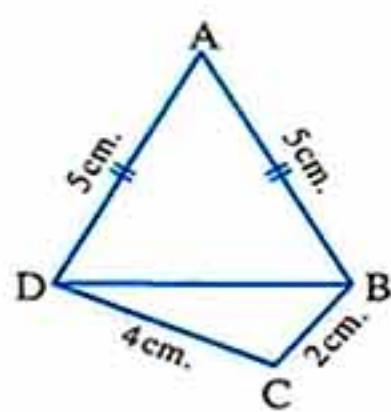
## 4 [a] In the opposite figure :

ABCD is a quadrilateral in which  $AB = AD = 5 \text{ cm}$ .

,  $BC = 2 \text{ cm}$  ,  $DC = 4 \text{ cm}$ .

**Prove that :**

$$m(\angle ABC) > m(\angle ADC)$$

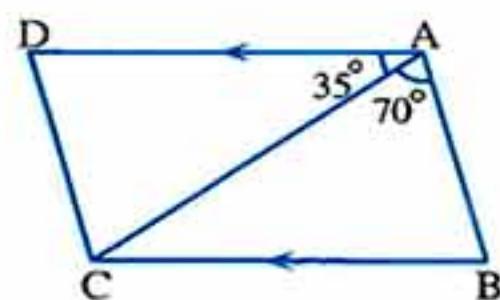


## [b] In the opposite figure :

$\overline{AD} \parallel \overline{BC}$  ,  $m(\angle BAC) = 70^\circ$

and  $m(\angle DAC) = 35^\circ$

**Prove that :**  $AC > BC$



## 5 In the opposite figure :

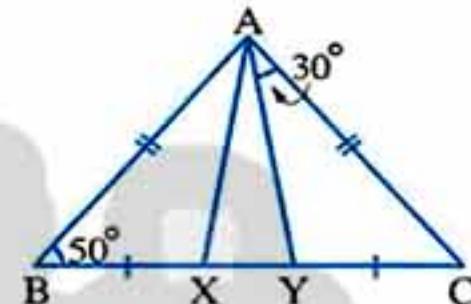
ABC is a triangle in which

$AB = AC$  ,  $BX = CY$

If  $m(\angle B) = 50^\circ$  ,  $m(\angle CAY) = 30^\circ$

1 Prove that : AYX is an isosceles triangle.

2 Find :  $m(\angle AXY)$



## 14 El-Minia Governorate

El-Minia Directorate of Education  
Kafr El-Mansura Formal Language School



Answer the following questions :

## 1 Choose the correct answer :

1 The triangle in which the measures of two angles of it are  $42^\circ$  and  $69^\circ$  is .....

(a) an isosceles triangle. (b) an equilateral triangle.

(c) a scalene triangle. (d) a right-angled triangle.

2 In  $\Delta ABC$  which is right-angled at B , if  $AC = 20 \text{ cm}$  , then the length of the median drawn from B equals .....

(a) 10 cm. (b) 8 cm. (c) 6 cm. (d) 5 cm.

3 In  $\Delta ABC$  , if  $m(\angle B) = 130^\circ$  , then the longest side of it is .....

(a)  $\overline{BC}$  (b)  $\overline{AC}$  (c)  $\overline{AB}$  (d) its median.

4 The two angles are said to be supplementary if the sum of their measures is .....

(a) zero° (b)  $90^\circ$  (c)  $180^\circ$  (d)  $360^\circ$

## Geometry

**5** The lengths which can be lengths of sides of a triangle are .....  
 (a) (0 , 3 , 5)      (b) (3 , 3 , 5)      (c) (3 , 3 , 6)      (d) (3 , 3 , 7)

**6**  $\Delta XYZ$  is an isosceles triangle in which  $m(\angle X) = 100^\circ$ , then  $m(\angle Y) = \dots$   
 (a)  $100^\circ$       (b)  $80^\circ$       (c)  $60^\circ$       (d)  $40^\circ$

**2 Complete :**

**1** The sum of measures of the accumulative angles at a point is .....°

**2** The ray drawn from the midpoint of a side of a triangle parallel to another side ..... the third side.

**3** If the measure of an angle in an isosceles triangle equals  $60^\circ$ , then the triangle is .....

**4** The point of concurrence of the medians of the triangle divides each median in the ratio of ..... from the base.

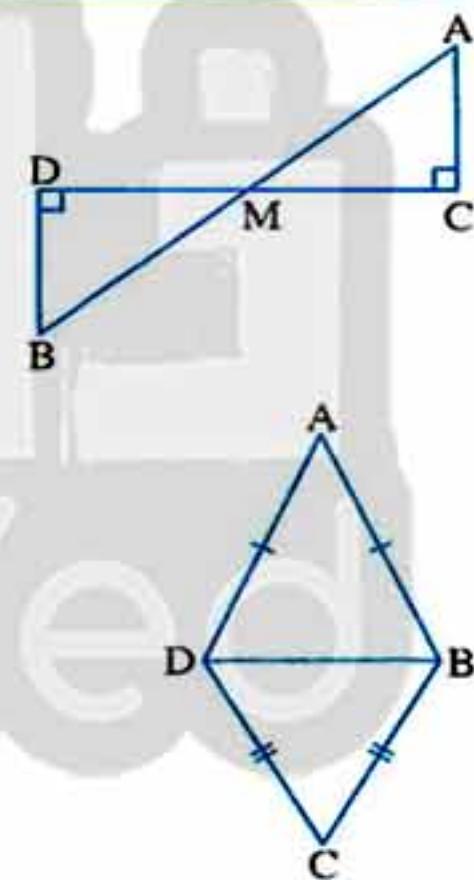
**5** In  $\Delta ABC$ ,  $m(\angle B) = 70^\circ$ ,  $m(\angle C) = 50^\circ$ , then  $AC \dots AB$

**3 [a] In the opposite figure :**

$$\overline{AB} \cap \overline{CD} = \{M\}, \overline{AC} \perp \overline{CD}$$

$$, \overline{BD} \perp \overline{CD}$$

Prove that :  $AB > CD$

**[b] In the opposite figure :**

$$AB = AD, BC = CD$$

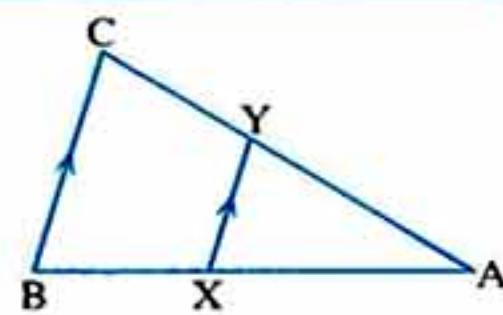
Prove that :

$$m(\angle ABC) = m(\angle ADC)$$

**4 [a] In the opposite figure :**

$$AB > BC, \overline{XY} // \overline{BC}$$

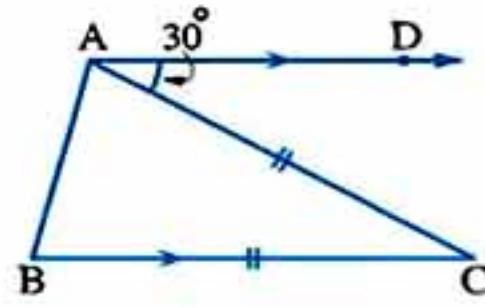
Prove that :  $AX > XY$

**[b] In the opposite figure :**

ABC is a triangle in which  $AC = BC$ ,  $\overrightarrow{AD} // \overrightarrow{BC}$ ,  $m(\angle DAC) = 30^\circ$

Find with proof :

The measures of the angles of  $\Delta ABC$



## Final Examinations

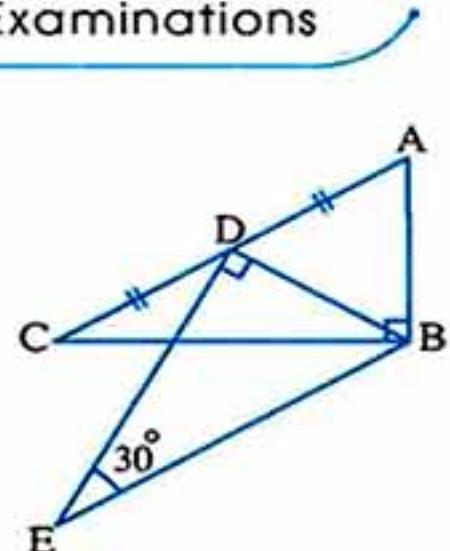
5 [a] In the opposite figure :

$$m(\angle ABC) = m(\angle BDE) = 90^\circ$$

$$, m(\angle E) = 30^\circ$$

, D is the midpoint of  $\overline{AC}$

Prove that :  $AC = BE$



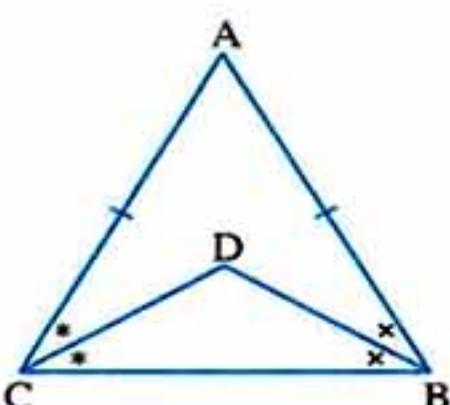
[b] In the opposite figure :

$$AB = AC, \overrightarrow{BD} \text{ bisects } \angle ABC$$

$$\text{and } \overrightarrow{CD} \text{ bisects } \angle ACB$$

Prove that :

$\triangle DBC$  is isosceles.



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Qena Governorate

Qena Directorate of Education  
Math's Supervision

Answer the following questions :

1 Complete each of the following :

- 1 The number of axes of symmetry of the equilateral triangle equals .....
- 2 In the triangle ABC , if  $AC = BC$  and  $m(\angle C) = 80^\circ$  , then  $m(\angle A) = \dots^\circ$
- 3 XYZ is a triangle ,  $m(\angle X) = 60^\circ$  ,  $m(\angle Y) = 40^\circ$  , then  $XZ \dots ZY$
- 4 The point of intersection of the medians of the triangle divides each of them with the ratio of ..... from the vertex.
- 5 The perpendicular bisector of a line segment is called .....

2 Choose the correct answer from those given :

- 1 The lengths 9 cm. , 4 cm. and ..... may be the side lengths of an isosceles triangle.
  - (a) 9 cm.
  - (b) 13 cm.
  - (c) 5 cm.
  - (d) 4 cm.
- 2  $\overline{AD}$  is a median of  $\triangle ABC$  , and M is the point of concurrence of the medians , then  $AM = \dots AD$ 
  - (a)  $\frac{2}{3}$
  - (b)  $\frac{1}{2}$
  - (c)  $\frac{3}{2}$
  - (d) 2
- 3 The measure of the exterior angle of an equilateral triangle equals .....
  - (a)  $30^\circ$
  - (b)  $60^\circ$
  - (c)  $120^\circ$
  - (d)  $90^\circ$

## Geometry

4 In the triangle ABC , if  $m(\angle B) = 90^\circ$  , then the greatest side in length is .....

(a)  $\overline{AB}$       (b)  $\overline{AC}$       (c)  $\overline{CB}$       (d)  $\overline{XY}$

5 In  $\triangle XYZ$  , if  $XY > ZX$  , then  $m(\angle Y) \dots m(\angle Z)$

(a)  $>$       (b)  $<$       (c)  $=$       (d)  $\equiv$

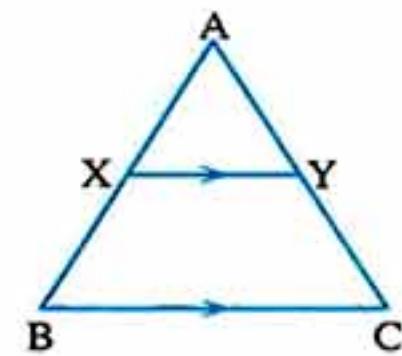
3 [a] In the opposite figure :

ABC is a triangle in which  $AB = AC$

,  $\overline{XY} \parallel \overline{BC}$

Prove that :

$\triangle AXY$  is an isosceles triangle.



[b] In  $\triangle ABC$  ,  $m(\angle A) = 40^\circ$  ,  $m(\angle B) = 75^\circ$  Arrange the lengths of sides of  $\triangle ABC$  in an ascending order.

4 [a] In the opposite figure :

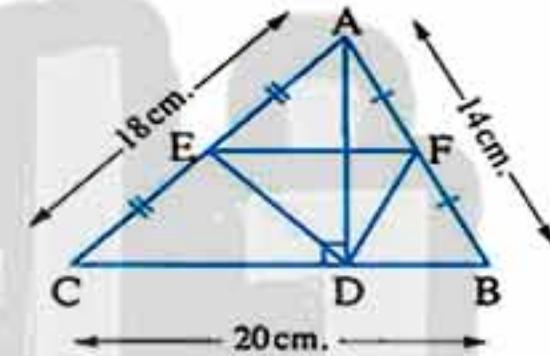
ABC is a triangle in which  $AB = 14\text{ cm.}$

,  $AC = 18\text{ cm.}$  ,  $BC = 20\text{ cm.}$

, E is the midpoint of  $\overline{AC}$

, F is the midpoint of  $\overline{AB}$  , and  $\overline{AD} \perp \overline{BC}$

Find : The perimeter of  $\triangle DEF$

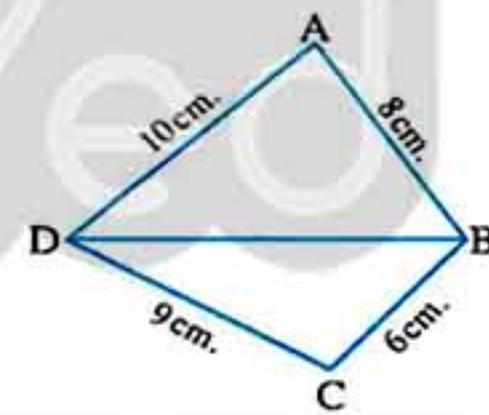


[b] In the opposite figure :

ABCD is a quadrilateral in which  $AB = 8\text{ cm.}$

,  $BC = 6\text{ cm.}$  ,  $CD = 9\text{ cm.}$

and  $DA = 10\text{ cm.}$



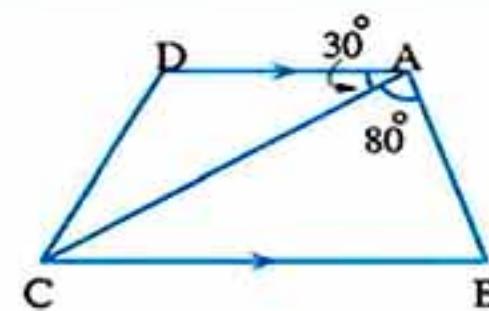
Prove that :  $m(\angle ABC) > m(\angle ADC)$

5 [a] In the opposite figure :

$\overline{AD} \parallel \overline{BC}$  ,  $m(\angle BAC) = 80^\circ$

,  $m(\angle DAC) = 30^\circ$

Prove that :  $BC > AB$



[b] Complete : In  $\triangle ABC$  , if  $AB = 7\text{ cm.}$  ,  $AC = 5\text{ cm.}$  , then .....  $< BC <$  .....

Final  
Examinations of

Geometry  
2019



## Some Schools Examinations on Geometry

1

Cairo Governorate

East Nasr city administration  
Heliopolis Language School  
Mathematics Department

Answer the following questions :

## ① Complete :

- (1) The intersection point of the three medians of the triangle divide the median in the ratio ..... from the vertex.
- (2) In  $\triangle ABC$  : If  $CA = CB$  and  $m(\angle C) = m(\angle A)$ , then  $m(\angle B) = \dots^\circ$
- (3) The bisector of the vertex angle of the isosceles triangle is ..... and .....
- (4) If the measure of an angle in the isosceles triangle is  $100^\circ$ , then the number of axes of symmetry of  $\triangle ABC$  is .....
- (5) The longest side in the right-angled triangle is .....

## ② Choose the correct answer :

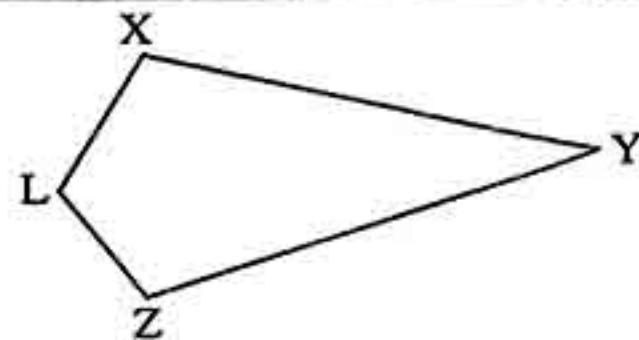
- (1) In  $\triangle ABC$  : If  $m(\angle B) = 90^\circ$ , then .....
  - (a)  $AC > CB$
  - (b)  $AB > AC$
  - (c)  $BC > AC$
  - (d)  $AB = AC$
- (2) If the lengths of two sides of an isosceles triangle are 3 cm. and 7 cm., then the length of the third side is .....
  - (a) 3
  - (b) 4
  - (c) 7
  - (d) 10
- (3) In  $\triangle ABC$  : If  $AB = AC$  and  $m(\angle A) = 60^\circ$ , then the number of axes of symmetry of the triangle ABC is .....
  - (a) 0
  - (b) 1
  - (c) 2
  - (d) 3
- (4) Any triangle has ..... medians.
  - (a) 0
  - (b) 1
  - (c) 2
  - (d) 3
- (5) If ABCD is a square, then the axes of symmetry of  $\overline{AC}$  is .....
  - (a)  $\overleftrightarrow{AD}$
  - (b)  $\overleftrightarrow{BC}$
  - (c)  $\overleftrightarrow{BD}$
  - (d)  $\overleftrightarrow{AB}$

## ③ [a] In the opposite figure :

$$XY > XL$$

and  $YZ > ZL$

Prove that :  $m(\angle XLZ) > m(\angle XYZ)$

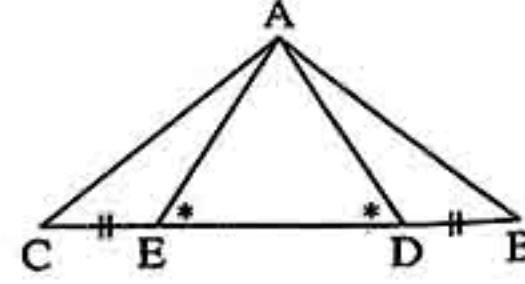


## [b] In the opposite figure :

$$\angle ADC \equiv \angle AED \text{ and } BD = CE$$

, B , D , E and C are collinear.

Prove that :  $\triangle ABC$  is an isosceles triangle.



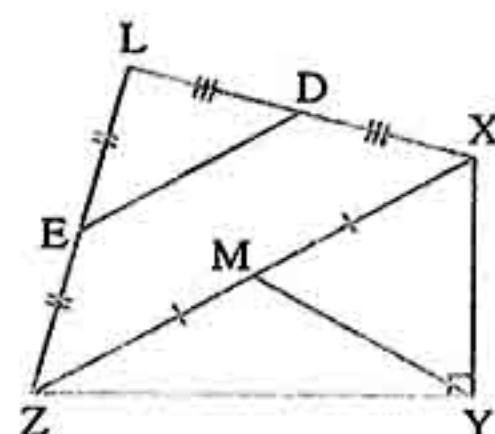
4 [a] In the opposite figure :

$$m(\angle XYZ) = 90^\circ$$

, D is midpoint of  $\overline{XL}$

, E is midpoint of  $\overline{ZL}$  and M is the midpoint of  $\overline{XZ}$

Prove that :  $DE = YM$



[b] In the opposite figure :

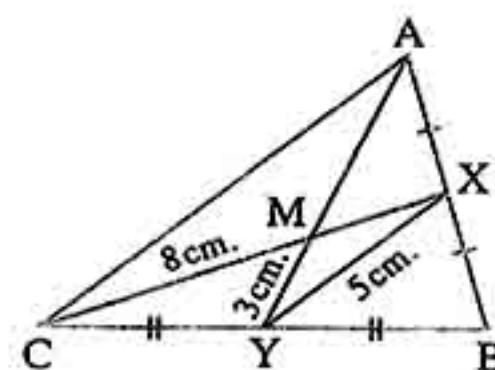
$\triangle ABC$  is a triangle , X is the midpoint of  $\overline{AB}$

, Y is midpoint of  $\overline{BC}$  ,  $XY = 5 \text{ cm.}$  and  $\overline{XC} \cap \overline{AY} = \{M\}$

where  $CM = 8 \text{ cm.}$  ,  $YM = 3 \text{ cm.}$

Find : (1) The perimeter of  $\triangle MXY$

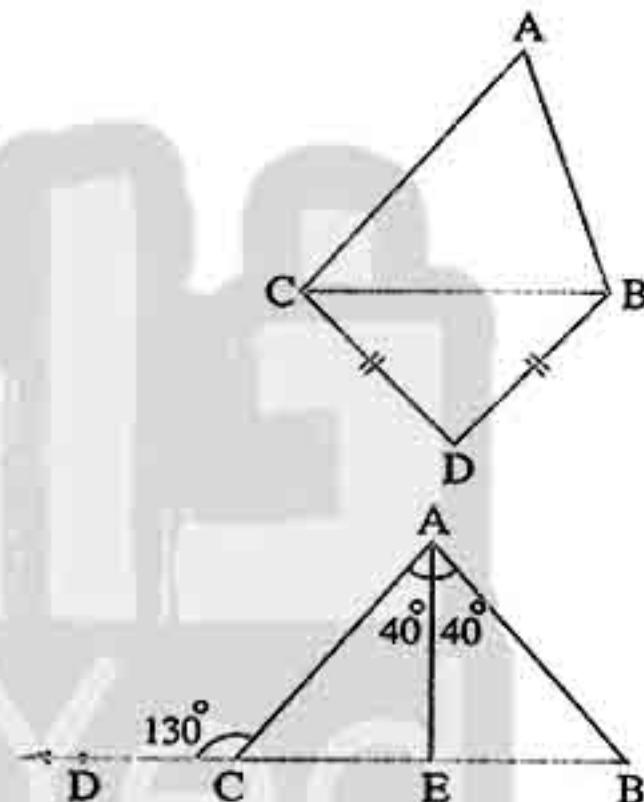
(2) The perimeter of  $\triangle MAC$



5 [a] In the opposite figure :

$AC > AB$  and  $DB = DC$

Prove that :  $m(\angle ABD) > m(\angle ACD)$



[b] In the opposite figure :

$C \in \overleftrightarrow{BD}$  ,  $m(\angle ACD) = 130^\circ$

and  $m(\angle BAE) = m(\angle CAE) = 40^\circ$

Prove that : (1)  $\overline{AE} \perp \overline{BC}$

(2) E bisects  $\overline{BC}$

2

Cairo Governorate

Maadi Educational Zone  
Sakkara Language School



Answer the following questions :

1 Complete :

- (1) In  $\triangle XYZ$  ,  $m(\angle X) = 90^\circ$  , then the longest side is .....
- (2) The base angles of the isosceles triangle are .....
- (3)  $\triangle ABC$  is a triangle in which  $AB = 4 \text{ cm.}$  ,  $CB = 7 \text{ cm.}$  , then  $AC \in ]..... , .....$
- (4) If  $A \in$  the axis of symmetry of  $\overline{XY}$  , then ..... = .....
- (5) If the measure of an angle in the isosceles triangle equals  $60^\circ$  , then the triangle has ..... axes of symmetry.

## Geometry

## 2 Choose the correct answer :

(1) The measure of the exterior angle of equilateral triangle = .....  
 (a)  $90^\circ$       (b)  $120^\circ$       (c)  $45^\circ$       (d)  $60^\circ$

(2) If  $\overline{AD}$  is a median in  $\triangle ABC$  and M is the point of intersection of the medians , then  
 $AM = \dots \cdot AD$   
 (a)  $\frac{1}{3}$       (b)  $\frac{2}{3}$       (c)  $\frac{3}{2}$       (d)  $\frac{1}{2}$

(3) In  $\triangle XYZ$  , if  $m(\angle Z) = 70^\circ$  and  $m(\angle Y) = 60^\circ$  , then  $YZ \dots XY$   
 (a)  $<$       (b)  $=$       (c)  $>$       (d) is twice

(4) The numbers 4 , 8 , ..... can be lengths of sides of an isosceles triangle.  
 (a) 4      (b) 8      (c) 12      (d) 3

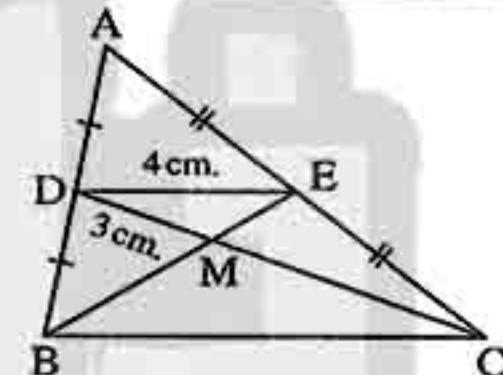
(5) In  $\triangle ABC$  , if  $m(\angle B) = 90^\circ$  and  $m(\angle C) = 30^\circ$  , then  $AB \dots AC$   
 (a)  $\frac{1}{3}$       (b) 2      (c) equals      (d)  $\frac{1}{2}$

## 3 [a] In the opposite figure :

D is the midpoint of  $\overline{AB}$  , E is the midpoint of  $\overline{AC}$   
 $, \overline{CD} \cap \overline{BE} = \{M\}$

If  $DE = 4 \text{ cm.}$  ,  $DM = 3 \text{ cm.}$  ,  $BE = 6 \text{ cm.}$

Find : The perimeter of  $\triangle BMC$

[b] In  $\triangle ABC$  , if  $AB = 5 \text{ cm.}$  ,  $BC = 7 \text{ cm.}$  and  $AC = 9 \text{ cm.}$ 

Arrange the measures of its angles in a descending order.

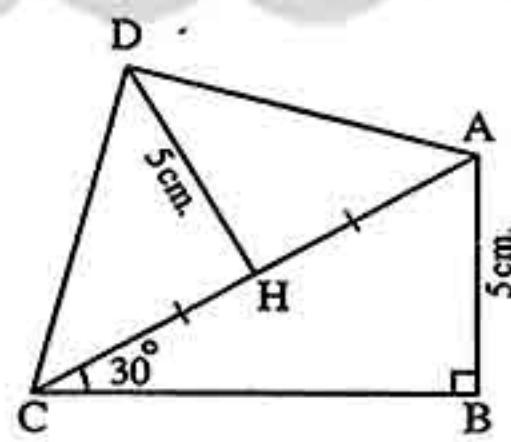
## 4 [a] In the opposite figure :

ABC is a right angled triangle at B

,  $m(\angle ACB) = 30^\circ$  ,  $AB = 5 \text{ cm.}$

,  $DH = 5 \text{ cm.}$  and H is the midpoint of  $\overline{AC}$

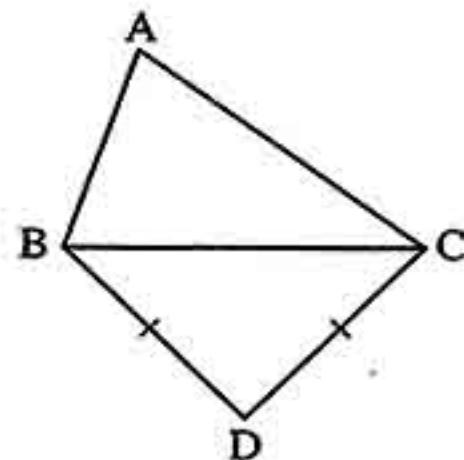
Prove that :  $m(\angle ADC) = 90^\circ$



## [b] In the opposite figure :

If  $AC > AB$  and  $DC = DB$

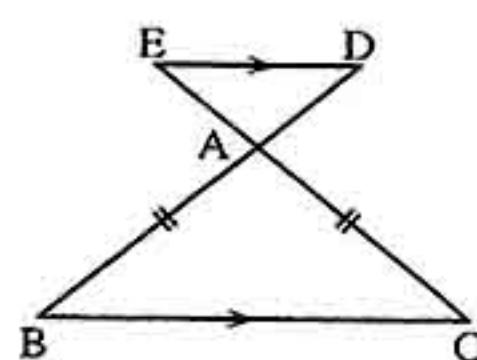
Prove that :  $m(\angle ABD) > m(\angle ACD)$



5 [a] In the opposite figure :

If  $AB = AC$

Prove that :  $AD = AE$



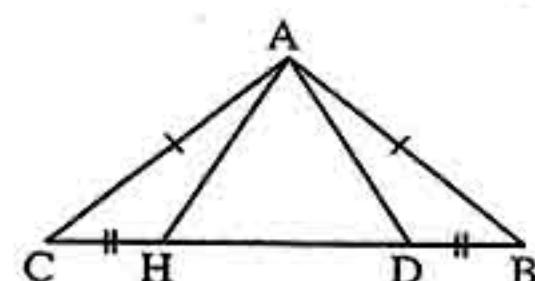
[b] In the opposite figure :

$ABC$  is a triangle in which :

$AB = AC$ ,  $BD = CH$

Prove that : ①  $\triangle ADH$  is an isosceles triangle.

②  $\angle AHD \cong \angle ADH$



Cairo Governorate

El-Sayda Zinab Educational Zone



Answer the following questions :

1 Choose the suitable answer :

① The number of axes of symmetry of an equilateral triangle is .....

(a) 0      (b) 1      (c) 2      (d) 3

② An isosceles triangle , one of its base angles has measure  $50^\circ$  , then the measure of the vertex angle = .....

(a)  $50^\circ$       (b)  $60^\circ$       (c)  $70^\circ$       (d)  $80^\circ$

③  $\overline{AD}$  is a median of triangle  $ABC$  , and  $M$  is the point of intersection of the medians , then  $AM = \dots AD$

(a)  $\frac{1}{3}$       (b)  $\frac{2}{3}$       (c)  $\frac{1}{2}$       (d)  $\frac{1}{4}$

④ If the lengths of two sides of a triangle are 4 cm. and 8 cm. , then the length of the third side = ..... cm.

(a) 3      (b) 4      (c) 8      (d) 12

⑤ In a triangle  $ABC$  , if  $m(\angle A) = 80^\circ$  and  $m(\angle C) = 60^\circ$  , then  $AB \dots BC$

(a)  $<$       (b)  $>$       (c)  $=$       (d)  $\geq$

2 Complete :

① If  $XYZ$  is a right-angled triangle at  $Y$  , then the longest side is .....

② The sum of measures of any two consecutive angles in the parallelogram = ..... °

③ The straight line perpendicular to the midpoint of a line segment is called .....

④ The bisectors of the vertex angle of an isosceles triangle ..... and .....

⑤ The measure of the exterior angle of the equilateral triangle = ..... °



**② In the opposite figure :**

If  $AB = AC$  and  $BE = BC$

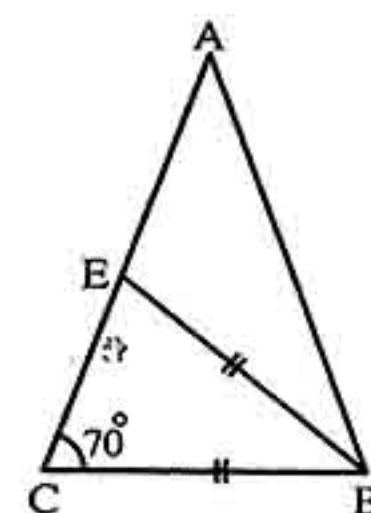
, then :  $m(\angle ABE) = \dots$

(a)  $30^\circ$

(b)  $40^\circ$

(c)  $70^\circ$

(d)  $110^\circ$

**③ In the opposite figure :**

$\Delta ABC$ ,  $AB = BC$

, an altitude is drawn from B to  $\overline{AC}$  and intersects  $\overline{AC}$  at D

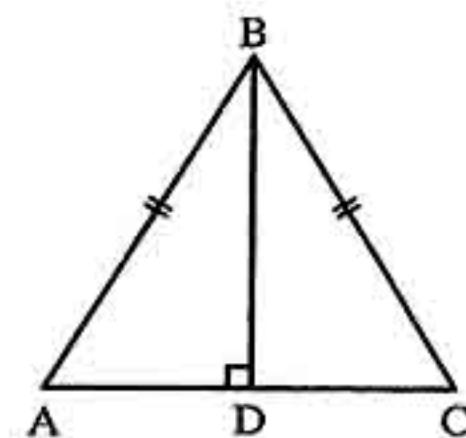
which conclusion is not always true ?

(a)  $m(\angle ABD) = m(\angle CBD)$

(b)  $m(\angle BDA) = m(\angle BDC)$

(c)  $AD = BD$

(d)  $AD = DC$

**④ Which set of numbers represents the lengths of the sides of a triangle ?**

(a) {5, 18, 13}    (b) {6, 17, 22}    (c) {16, 24, 7}    (d) {26, 8, 15}

**⑤ The point of concurrency of medians divides each median in the ratio ..... from the base.**

(a) 1 : 2

(b) 2 : 1

(c) 3 : 1

(d) 2 : 3

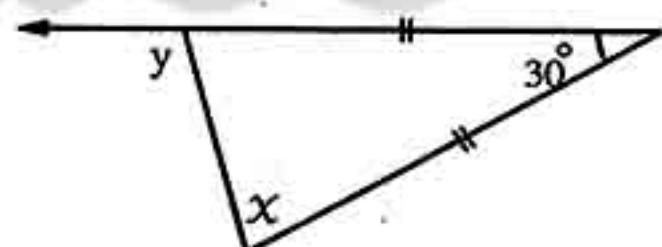
**[2] Complete :**

① The longest side in the right-angled triangle is .....

② If the measure of an angle in the isosceles triangle equals  $60^\circ$  , then the triangle is .....

**③ In the opposite figure :**

$x = \dots^\circ$  and  $y = \dots^\circ$



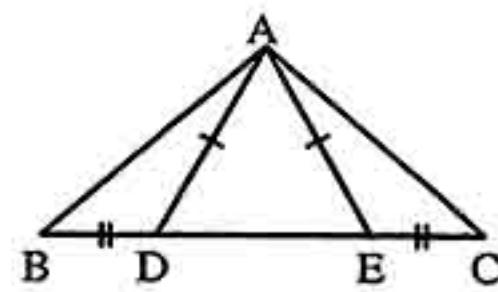
④ If the length of the median drawn from the right vertex of a triangle is 6 cm. , then the length of the hypotenuse is ..... cm.

⑤ In  $\Delta ABC$  ,  $m(\angle A) = 60^\circ$  ,  $m(\angle B) = 50^\circ$  , then the longest side is .....

**[3] [a] In the opposite figure :**

$AD = AE$  and  $BD = CE$

Prove that :  $\Delta ABC$  is an isosceles triangle.

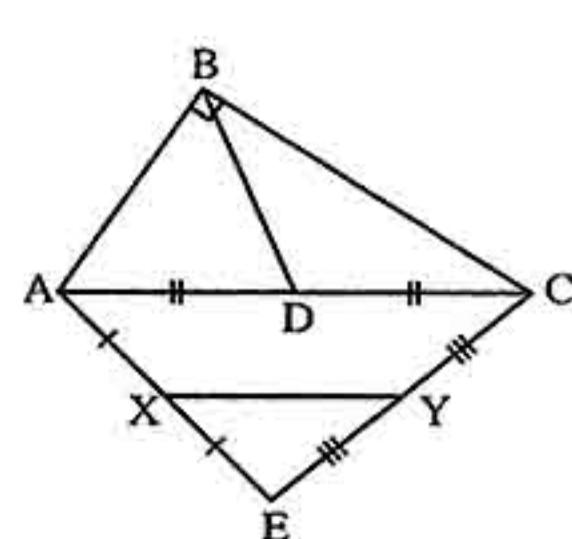


## Geometry

[b] In the opposite figure :

- $\triangle ABC$  is right-angled at B
- , D is the midpoint of  $\overline{AC}$
- , X and Y are the midpoints of  $\overline{AE}$  and  $\overline{CE}$  respectively.

Prove that :  $BD = XY$



4 [a] In the opposite figure :

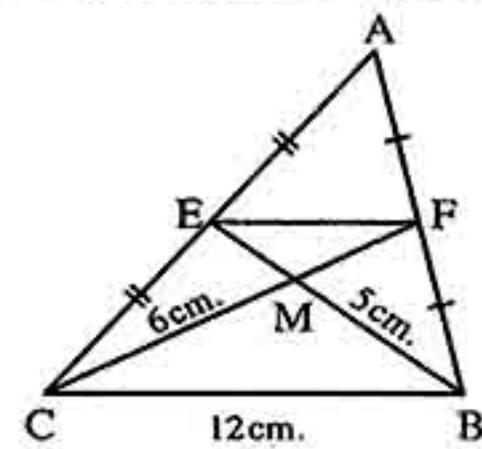
$\triangle ABC$  , F and E are the midpoints of  $\overline{AB}$  and  $\overline{AC}$  respectively.

If  $BM = 5 \text{ cm.}$  ,  $CM = 6 \text{ cm.}$  ,  $BC = 12 \text{ cm.}$  ,

then find : The perimeter of  $\triangle MEF$

[b] In  $\triangle ABC$  ,  $m(\angle A) = 3x^\circ$  ,  $m(\angle B) = (4x - 9)^\circ$   
and  $m(\angle C) = (2x + 9)^\circ$

Find the measure of each angle and arrange the sides in a descending order according to their lengths.

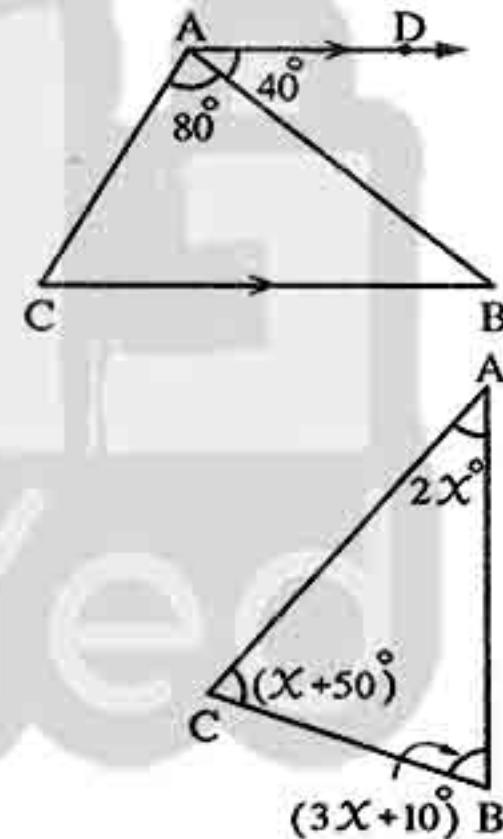


5 [a] In the opposite figure :

$\triangle ABC$  , in which :  $\overline{AD} \parallel \overline{BC}$

$m(\angle DAB) = 40^\circ$  and  $m(\angle BAC) = 80^\circ$

Prove that :  $AB > AC$



[b] In the opposite figure :

Show with proof , which sides are equal in length.

5 Giza Governorate

Omrania Directorate  
El sadat Governmental Language School



Answer the following questions :

1 Complete each of the following :

- ① The point of concurrence of medians of a triangle divides each median in ratio ..... : ..... from the vertex.
- ② The longest side in the right-angled triangle is .....
- ③ The straight line perpendicular to the midpoint of a line segment is called .....
- ④ The base angles of the isosceles triangle are .....
- ⑤ In  $\triangle ABC$  , if  $AB < BC < AC$  , then the greatest angle in measure is .....

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**2** Choose the correct answer from given ones :

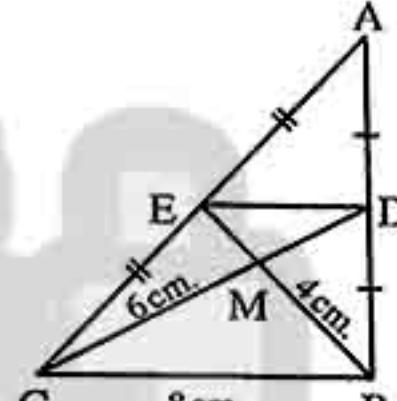
- ① The number of axes of symmetry in the scalene triangle is .....  
 (a) 1      (b) 2      (c) 3      (d) zero
- ② The measure of the exterior angle of an equilateral triangle is .....  
 (a)  $90^\circ$       (b)  $120^\circ$       (c)  $60^\circ$       (d)  $30^\circ$
- ③ The numbers 5 , 4 , ..... can be lengths of sides of a triangle.  
 (a) 8      (b) 9      (c) 10      (d) 12
- ④ In  $\triangle ABC$  ,  $AB = AC$  and  $m(\angle B) = 70^\circ$  , then  $m(\angle A) =$  .....  
 (a)  $140^\circ$       (b)  $70^\circ$       (c)  $40^\circ$       (d)  $110^\circ$
- ⑤  $\triangle ABC$  in which :  $m(\angle B) > m(\angle C)$  , then  $AC \dots AB$   
 (a)  $>$       (b)  $<$       (c)  $=$       (d)  $\leq$

**3 [a] In the opposite figure :**

ABC is a triangle in which D , E are midpoints of  $\overline{AB}$  and  $\overline{AC}$  respectively ,

$MC = 6 \text{ cm.}$  ,  $MB = 4 \text{ cm.}$  and  $BC = 8 \text{ cm.}$

Find : The perimeter of  $\triangle DME$



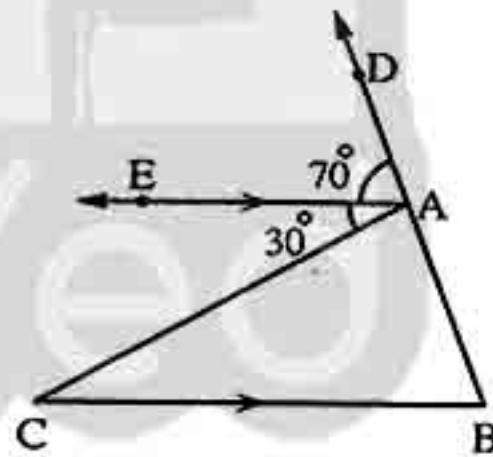
**[b] In the opposite figure :**

$$\overrightarrow{AE} \parallel \overrightarrow{BC}$$

$$, m(\angle DAE) = 70^\circ$$

$$, m(\angle EAC) = 30^\circ$$

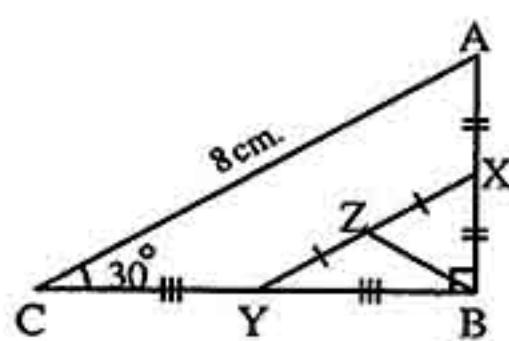
Prove that :  $AC > AB$



**4 [a] In the opposite figure :**

ABC is a triangle in which :  $m(\angle ABC) = 90^\circ$

,  $m(\angle C) = 30^\circ$  , X , Y and Z are midpoints of  $\overline{AB}$  ,  $\overline{BC}$  and  $\overline{XY}$  respectively and  $AC = 8 \text{ cm.}$



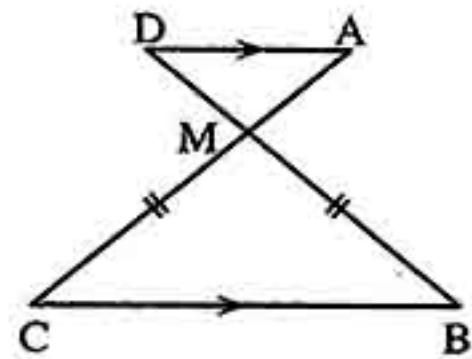
Find : The length of each of  $\overline{AB}$  ,  $\overline{XY}$  ,  $\overline{BZ}$

**[b] In the opposite figure :**

$$\overline{AC} \cap \overline{BD} = \{M\}$$

$$, MB = MC \text{ and } \overrightarrow{AD} \parallel \overrightarrow{BC}$$

Prove that :  $MA = MD$

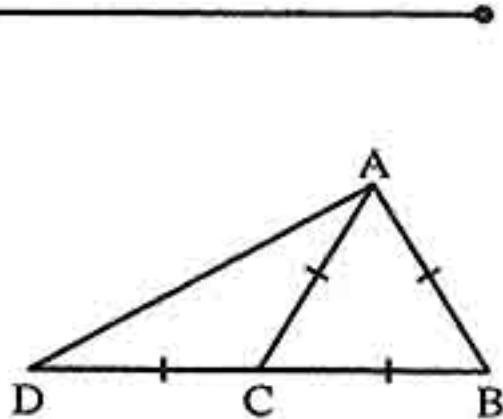


## Geometry

5 In the opposite figure :

$ABC$  is an equilateral triangle  
 $, D \in \overrightarrow{BC}$  such that  $BC = CD$

Prove that :  $\overline{BA} \perp \overline{AD}$



Alexandria Governorate

Middle Educational Directorate  
Math's Supervision



Answer the following questions :

1 Choose the correct answer :

- ① The isosceles triangle has ..... of symmetry.  
 (a) one axis      (b) two axes      (c) three axes      (d) zero axes
- ② In  $\triangle ABC$ , if  $m(\angle A) = 125^\circ$ , then the longest side of it is .....  
 (a)  $\overline{AB}$       (b)  $\overline{AC}$       (c)  $\overline{BC}$       (d) its median
- ③ If  $XYZ$  is an isosceles triangle,  $m(\angle Y) = 100^\circ$ , then  $m(\angle X) = \dots$ .  
 (a)  $80^\circ$       (b)  $40^\circ$       (c)  $20^\circ$       (d)  $100^\circ$
- ④ In  $\triangle ABC$  if  $m(\angle A) = 30^\circ$ ,  $m(\angle B) = 90^\circ$ , then  $BC = \dots AC$   
 (a)  $\frac{1}{2}$       (b)  $\frac{2}{3}$       (c)  $\frac{1}{3}$       (d) 2
- ⑤ The measure of each exterior angle of equilateral triangle is .....  
 (a)  $180^\circ$       (b)  $360^\circ$       (c)  $60^\circ$       (d)  $120^\circ$

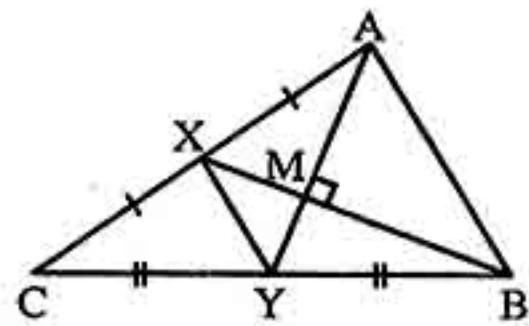
2 Complete :

- ① The point of concurrence divides each median in the ratio ..... from the base.
- ② The longest side in the right angled triangle is .....
- ③ The sum of measures of the exterior angles of a square is ..... °.
- ④ The numbers 8, 4, ..... can be lengths of sides of an isosceles triangle.
- ⑤ The axis of symmetry of a line segment is the straight line which is .....

3 [a] In the opposite figure :

$\overline{AY}$  and  $\overline{BX}$  are two medians where  $\overline{AY} \perp \overline{BX}$   
 $, \text{if } AY = 12 \text{ cm. and } XM = 5 \text{ cm.}$

Find : The area of  $\triangle ABM$

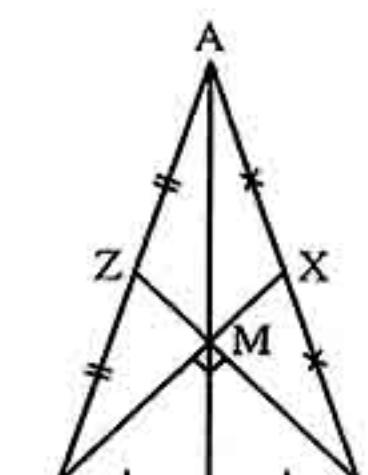


[b]  $ABC$  is a triangle in which :  $m(\angle A) = 6x^\circ$ ,  $m(\angle B) = (4x - 9)^\circ$  and  $m(\angle C) = 3(x - 2)^\circ$  Arrange the lengths of sides descendingly.

4 [a] In the opposite figure :

$\overline{BZ}$  and  $\overline{CX}$  are two medians of  $\triangle ABC$   
 $, \overline{CX} \perp \overline{BZ}$

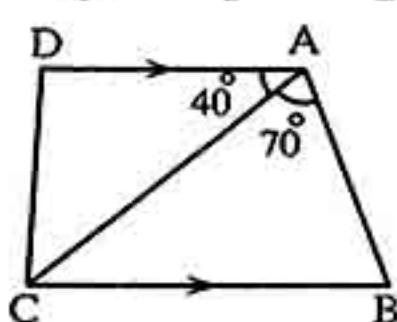
Prove that :  $AM = BC$



[b] In the opposite figure :

$\overline{AD} \parallel \overline{BC}$  ,  $m(\angle DAC) = 40^\circ$   
 $, m(\angle BAC) = 70^\circ$

Prove that :  $BC = AC$



5 [a] In the opposite figure :

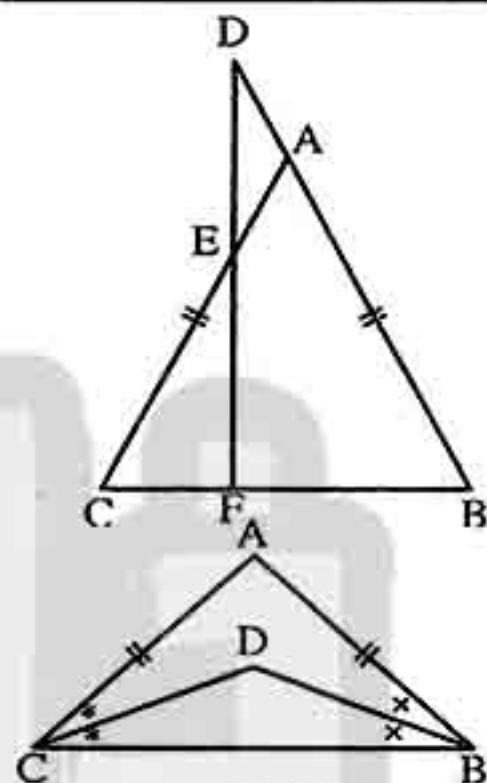
$AB = AC$

Prove that :  $EC > EF$

[b] In the opposite figure :

$AB = AC$   
 $, \overrightarrow{BD}$  bisects  $\angle B$   
 $, \overrightarrow{CD}$  bisects  $\angle C$

Prove that :  $BD = CD$



Alexandria Governorate

East Educational Zone  
Mathematics Directing



Answer the following questions :

1 Complete the following :

- ① If ABCD is a parallelogram and  $m(\angle A) = 70^\circ$  , then  $m(\angle B) = \dots \circ$
- ② The measure of the exterior angle in the equilateral triangle =  $\dots \circ$
- ③ The length of the median from the vertex of the right angle in the right-angled triangle =  $\dots$
- ④ If  $AB = AC$  in  $\triangle ABC$  and  $m(\angle B) = 40^\circ$  , then  $m(\angle C) = \dots \circ$
- ⑤ In  $\triangle XYZ$  , if  $XY < YZ < ZX$  , then the greatest angle in measure is  $\angle \dots$

2 Choose the correct answer from those given :

- ① The diagonals are perpendicular in .....
  - (a) square and rectangle.
  - (b) rectangle and rhombus.
  - (c) square and rhombus.
  - (d) parallelogram and rectangle.

## Geometry

(2) The point of the intersection of the medians in triangle divides each median from the base into the ratio .....

(a) 1 : 2      (b) 2 : 1      (c) 3 : 1      (d) 2 : 3

(3) The isosceles triangle has ..... axis of symmetry.

(a) 0      (b) 1      (c) 2      (d) 3

(4) If the lengths of two sides in an isosceles triangle 3 cm. and 7 cm. , then the length of the third side = ..... cm.

(a) 3      (b) 4      (c) 7      (d) 10

(5) In  $\triangle ABC$  , if  $m(\angle A) < m(\angle B)$  , then .....

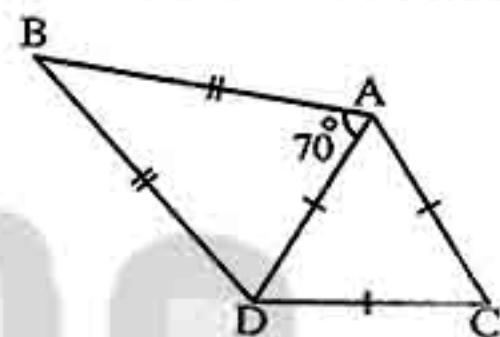
(a)  $AC < BC$       (b)  $AC > BC$       (c)  $AC = BC$       (d)  $\overline{AC} // \overline{BC}$

[3] [a] In the opposite figure :

$$AB = BD, m(\angle BAD) = 70^\circ$$

,  $\triangle ADC$  is an equilateral triangle.

Find :  $m(\angle BDC)$



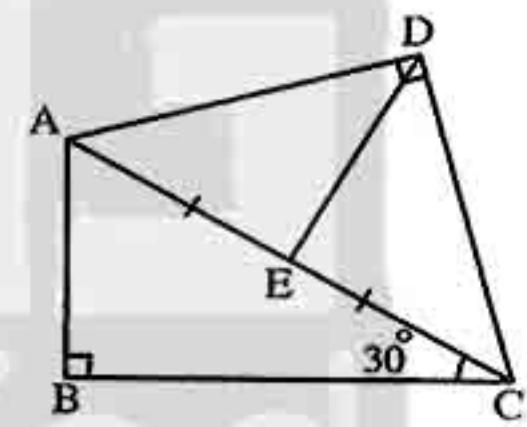
[b] In the opposite figure :

$$m(\angle ABC) = m(\angle ADC) = 90^\circ$$

$$, m(\angle ACB) = 30^\circ$$

, E is the midpoint of  $\overline{AC}$

Prove that :  $AB = ED$



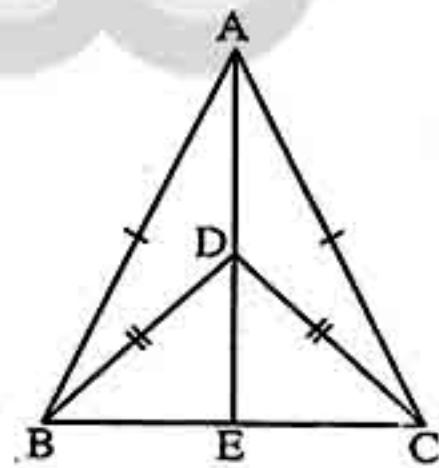
[4] [a] In the opposite figure :

$$AB = AC, DB = DC, D \in \overline{AE}$$

Prove that :

①  $\overline{AE} \perp \overline{BC}$

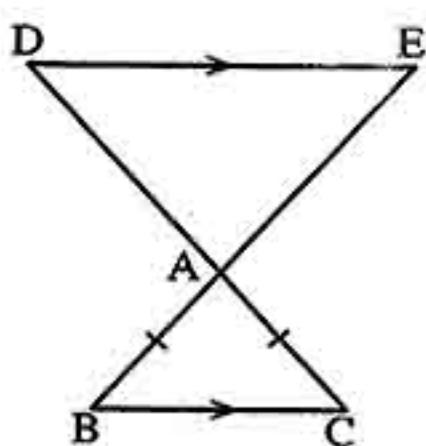
②  $BE = EC$



[b] In the opposite figure :

$$AB = AC \text{ and } \overrightarrow{DE} // \overrightarrow{BC}$$

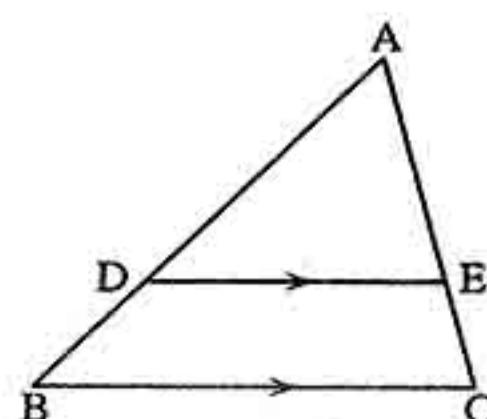
Prove that :  $AD = AE$



5 [a] In the opposite figure :

$$AB > AC, \overline{DE} // \overline{BC}$$

Prove that :  $AD > AE$



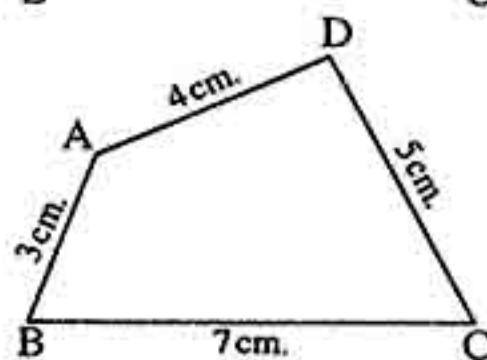
[b] In the opposite figure :

ABCD is a quadrilateral in which :

$$AB = 3 \text{ cm.}, BC = 7 \text{ cm.}$$

$$\text{, } CD = 5 \text{ cm. and } DA = 4 \text{ cm.}$$

Prove that :  $m(\angle BAD) > m(\angle BCD)$



## 8 El-Kalyoubia Governorate

Al-Obour Educational Zone  
Al-Resala Language School



Answer the following questions :

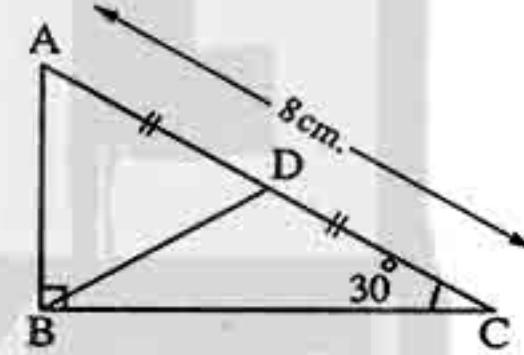
1 Complete the following :

(1) The bisector of the vertex angle of an isosceles triangle bisect the base and .....

(2) 3 cm. , 8 cm. and ..... cm. are three sides of an isosceles triangle.

(3) In the opposite figure :

The perimeter of  $\Delta ABD = \dots \text{ cm.}$



(4) The measure of the exterior angle of the equilateral triangle = .....°

(5) In  $\Delta ABC$  ,  $m(\angle A) = 100^\circ$  , then the longest side is .....

2 Choose the correct answer :

(1) In  $\Delta ABC$  , if  $m(\angle B) = 90^\circ$  and  $m(\angle A) = 30^\circ$  , then  $BC = \dots \text{ cm.}$

(a)  $\frac{1}{2} AC$       (b)  $2 AC$       (c)  $2 AB$       (d)  $\frac{1}{2} AB$

(2) If A is the axis of symmetry of  $\overline{BC}$  , then  $AB = \dots \text{ cm.}$

(a) XY      (b) XZ      (c) AC      (d) BC

(3) The triangle whose side length are  $2 \text{ cm.}$  ,  $(X + 3) \text{ cm.}$  and  $5 \text{ cm.}$  becomes an isosceles triangle when  $X = \dots \text{ cm.}$

(a) zero      (b) 1      (c) 2      (d) 3

(4) The number of axis of symmetry of the equilateral triangle = .....

(a) zero      (b) 1      (c) 2      (d) 3

## Geometry

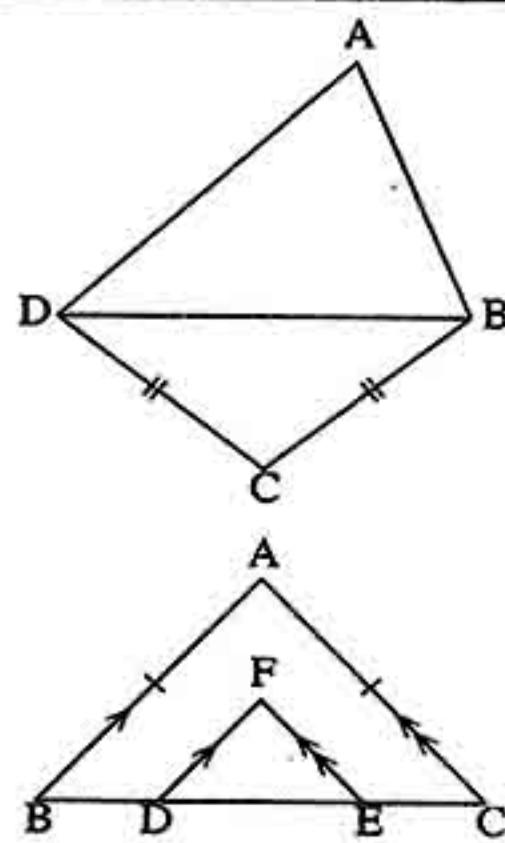
⑤ The sum of the lengths of any two sides in the triangle ..... the length of the third side.

(a) <      (b)  $\leq$       (c)  $\geq$       (d)  $>$       (e) =

③ [a] In the opposite figure :

ABCD is a quadrilateral in which  $AD > AB$  and  $BC = CD$

Prove that :  $m(\angle ABC) > m(\angle ADC)$



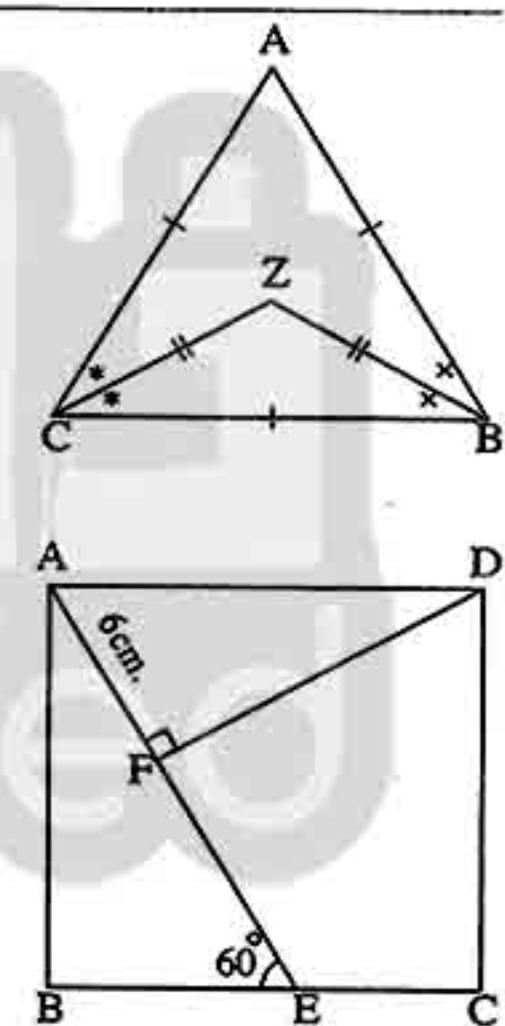
[b] In the opposite figure :

$D \in \overline{BC}$ ,  $E \in \overline{BC}$

,  $\overline{AB} \parallel \overline{FD}$  and  $\overline{AC} \parallel \overline{FE}$

, if  $AB = AC$

Prove that : FDE is an isosceles triangle.



④ [a] In the opposite figure :

$\triangle ABC$  is an equilateral triangle

,  $\overrightarrow{BZ}$  bisects  $\angle B$

,  $\overrightarrow{CZ}$  bisects  $\angle C$

Find : The measure of the angles in triangle CZB

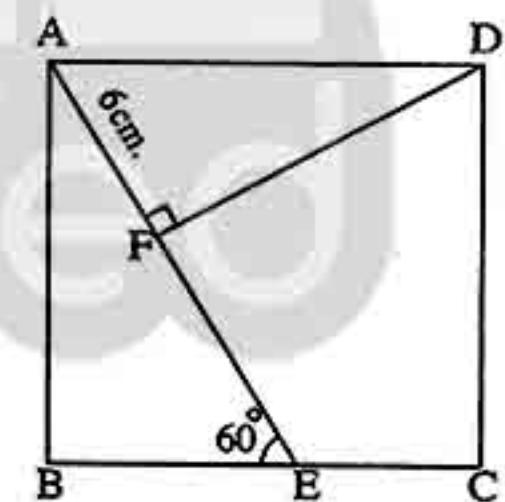
[b] In the opposite figure :

ABCD is a square

,  $m(\angle AEB) = 60^\circ$

,  $AF = 6\text{ cm.}$ ,  $\overline{DF} \perp \overline{AE}$

Find : The perimeter of the square ABCD



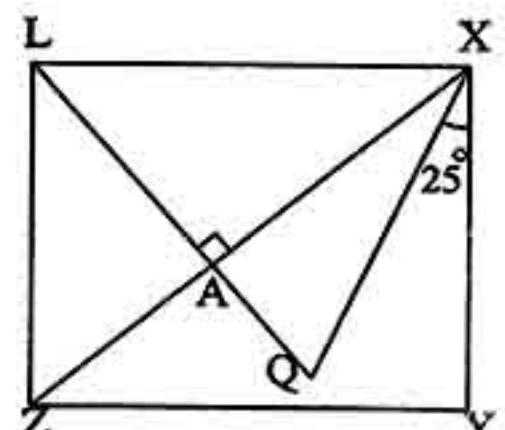
⑤ [a] In the opposite figure :

XYZL is a rectangle in which  $m(\angle YXQ) = 25^\circ$

,  $\overline{LQ} \perp \overline{XZ}$

,  $\overrightarrow{XQ}$  bisects angle YXZ

Prove that :  $LQ = XL$



[b] In  $\triangle ABC$ ,  $m(\angle A) = 40^\circ$ ,  $m(\angle B) = 80^\circ$

Arrange the length of the sides of the triangle ABC in a descending order.

9

El-Monofia Governorate

Maths Supervision

*Answer the following questions :***[1] Complete :**

- ① The perpendicular which is drawn from vertex of an isosceles triangle to its base ..... and .....
- ② The length of the median from the vertex of the right-angled triangle equals .....
- ③ In  $\Delta ABC$ , if  $AB = AC$  and  $m(\angle A) = 80^\circ$ , then  $m(\angle B) = \dots^\circ$ .
- ④ The measure of the exterior angle of the equilateral triangle =  $\dots^\circ$ .
- ⑤ In  $\Delta DEF$ , if  $DE > DF$ , then  $m(\angle F) > \dots$

**[2] Choose the correct answer :**

- ① If the length of two sides in an isosceles triangle are 8 cm. and 4 cm., then the length of the third side is ..... cm.
 

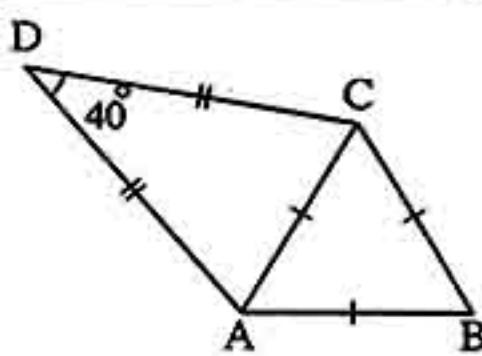
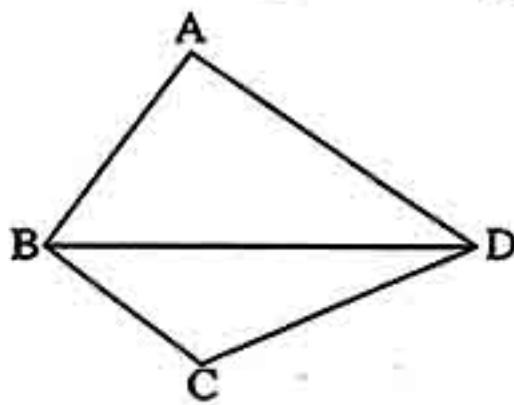
(a) 4	(b) 8	(c) 3	(d) 12
-------	-------	-------	--------
- ② The number of axes of symmetry in the isosceles triangle = .....
 

(a) 1	(b) 0	(c) 2	(d) 3
-------	-------	-------	-------
- ③  $\overline{AD}$  is a median in  $\Delta ABC$ , M is the point of intersection of the medians,  $MD = 2$  cm., then  $AD = \dots$  cm.
 

(a) 2	(b) 4	(c) 6	(d) 8
-------	-------	-------	-------
- ④  $\Delta ABC$ :  $m(\angle B) = 125^\circ$ , then the longest side of it is .....
 

(a) $\overline{BC}$	(b) $\overline{AC}$	(c) $\overline{AB}$	(d) its median
---------------------	---------------------	---------------------	----------------
- ⑤ In  $\Delta XYZ$ , if  $m(\angle Y) = 90^\circ$ ,  $m(\angle X) = 30^\circ$  and  $XZ = 20$  cm., then  $ZY = \dots$  cm.
 

(a) 12	(b) 6	(c) 24	(d) 10
--------	-------	--------	--------

**[3] [a] In the opposite figure :** $m(\angle D) = 40^\circ$ ,  $DA = DC$ and  $\Delta ABC$  is an equilateral triangleFind :  $m(\angle DCB)$ **[b] In the opposite figure :** $AB < AD$  and  $BC < CD$ Prove that :  $m(\angle ABC) > m(\angle ADC)$ 

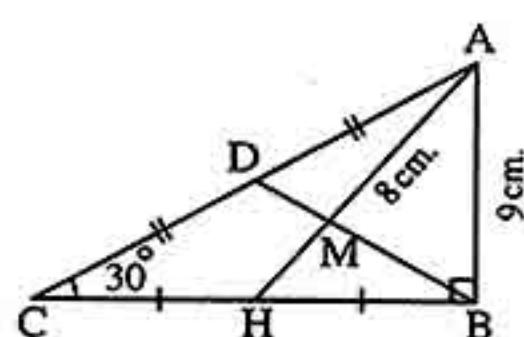
## Geometry

## 4 [a] In the opposite figure :

D and H are the midpoints of  $\overline{AC}$  and  $\overline{CB}$  respectively

$m(\angle C) = 30^\circ$ ,  $m(\angle B) = 90^\circ$ ,  $AB = 9 \text{ cm.}$ ,  $AM = 8 \text{ cm.}$

Find : The length of each of  $\overline{BD}$ ,  $\overline{AH}$  and  $\overline{MD}$



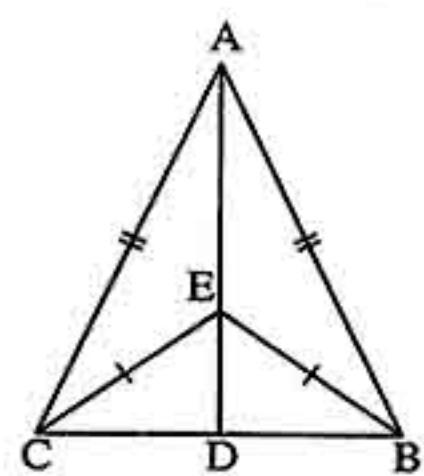
## [b] In the opposite figure :

$AB = AC$  and  $EB = EC$

Prove that :

(1)  $\overleftrightarrow{AE}$  is the axis of  $\overline{BC}$

(2)  $BD = CB$



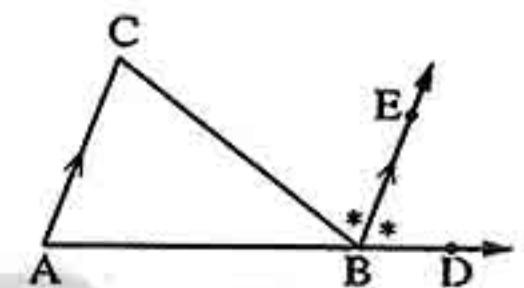
## 5 [a] In the opposite figure :

$D \in \overrightarrow{AB}$ ,  $\overrightarrow{BE}$  bisects  $\angle CBD$

and  $\overrightarrow{BE} \parallel \overrightarrow{AC}$

Prove that :

$\triangle ABC$  is an isosceles triangle,

[b] In  $\triangle ABC$  :  $m(\angle A) = 40^\circ$  and  $m(\angle B) = 80^\circ$ 

Arrange the lengths of the sides of the triangle ABC descendingly.

10 El-Dakahlia Governorate

Math's Supervision (L.E.S.)



Answer the following questions :

## 1 Complete :

- (1) The number of axes of symmetry of isosceles triangle is .....
- (2) The bisector of the vertex angle of the isosceles triangle .....
- (3) The medians of the triangle ..... at one point.
- (4) The longest side of the right-angled triangle is the .....
- (5) In  $\triangle ABC$ , if  $AB = AC$  and  $m(\angle C) = 40^\circ$ , then  $m(\angle A) = \dots^\circ$

## 2 Choose the correct answer :

- (1) Isosceles triangle whose side lengths are 4 cm.,  $(x + 3)$  cm. and 8 cm., then  $x = \dots$ 
  - (a) 4
  - (b) 5
  - (c) 3
  - (d) 8
- (2) In  $\triangle LMN$ , if  $m(\angle M) = 55^\circ$  and  $m(\angle N) = 80^\circ$ , then  $LM \dots MN$ 
  - (a) <
  - (b) >
  - (c) =
  - (d) twice

(3) The measure of the exterior angle of the equilateral triangle = .....°  
 (a) 30      (b) 60      (c) 90      (d) 120

(4) The base angles of the isosceles triangle are .....  
 (a) alternating      (b) corresponding      (c) congruent      (d) supplementary

(5) If  $\overline{AD}$  is a median of  $\triangle ABC$  and M is the point of concurrence of the medians , then  $MD = \dots AD$   
 (a)  $\frac{1}{3}$       (b)  $\frac{2}{3}$       (c)  $\frac{1}{2}$       (d)  $\frac{1}{4}$

[3] [a] In the opposite figure :

$$m(\angle ABC) = m(\angle BDE) = 90^\circ$$

$$\therefore m(\angle E) = 30^\circ$$

, D is the midpoint of  $\overline{AC}$

Prove that :  $AC = BE$

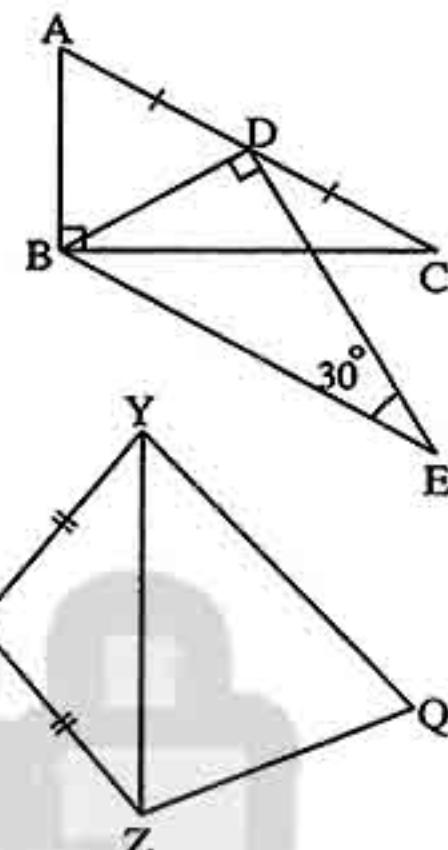
[b] In the opposite figure :

$$XY = XZ$$

$$\therefore QY > QZ$$

Prove that :

$$m(\angle XZQ) > m(\angle XYQ)$$



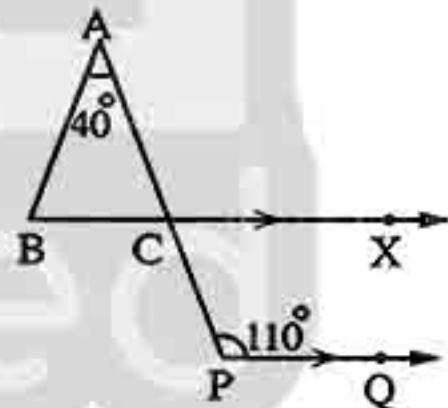
[4] [a] In the opposite figure :

$$X \in \overrightarrow{BC}, \overrightarrow{BC} \parallel \overrightarrow{PQ}$$

$$\therefore m(\angle P) = 110^\circ$$

$$\therefore m(\angle A) = 40^\circ$$

Prove that :  $AB = AC$



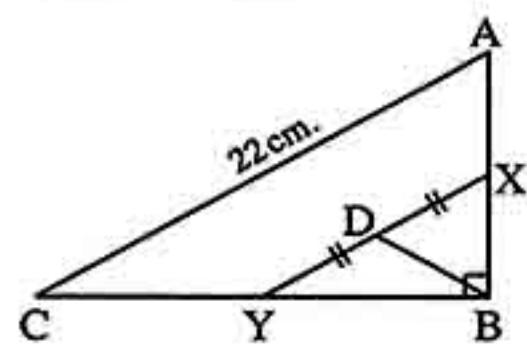
[b] In the opposite figure :

$$m(\angle ABC) = 90^\circ$$

X , Y , D are midpoints of  $\overline{AB}$  ,  $\overline{BC}$  ,  $\overline{XY}$  respectively.

$$AC = 22 \text{ cm.}$$

Find : BD

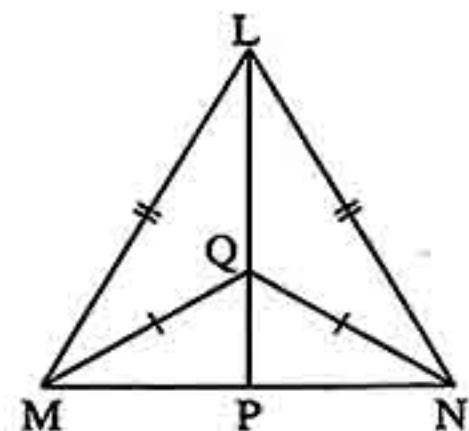


[5] [a] In the opposite figure :

$$LM = LN$$

$$\therefore QM = QN$$

Prove that :  $MP = NP$



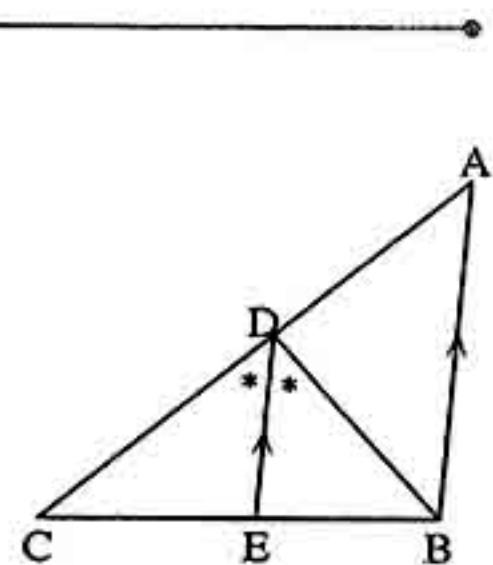
## Geometry

[b] In the opposite figure :

$\overrightarrow{DE}$  bisects  $\angle BDC$  and  $\overrightarrow{DE} \parallel \overrightarrow{AB}$

Prove that :

$AC > BC$



11

Ismailia Governorate

Directorate of Education  
Directorate of Math's

Answer the following questions :

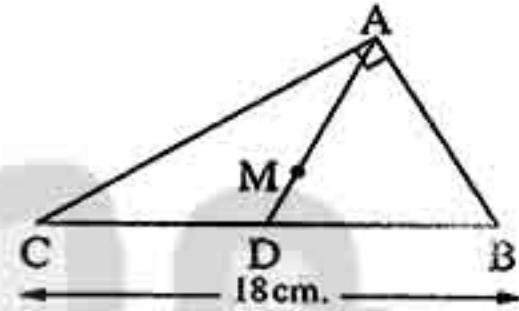
1 Choose the correct answer :

(1) In the opposite figure :

If  $m(\angle A) = 90^\circ$ ,  $\overrightarrow{AD}$  is a median,

M is the point of intersection of its medians  
and  $BC = 18 \text{ cm.}$ , then  $MA = \dots \text{ cm.}$

(a) 9 cm. (b) 3 cm. (c) 6 cm. (d) 18 cm.



(2) In  $\triangle XYZ$ , if  $m(\angle Y) < m(\angle Z)$ , then  $XY \dots XZ$

(a) = (b) < (c) > (d) twice

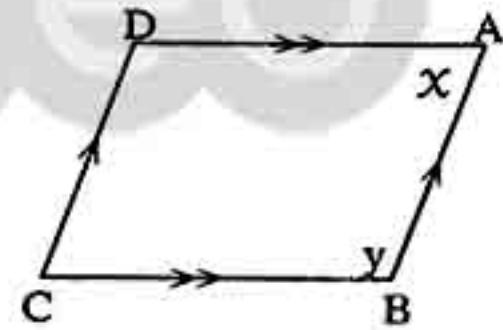
(3) If the measures of two angles of a triangle are  $65^\circ$  and  $50^\circ$ , then the triangle is .....

(a) scalene (d) equilateral (c) isosceles (d) right angled

(4) If ABCD is a parallelogram,  $x : y = 1 : 2$

, then  $m(\angle C) = \dots^\circ$

(a)  $60^\circ$  (b)  $120^\circ$   
(c)  $180^\circ$  (d)  $360^\circ$



(5) If 10 cm., 5 cm. and  $x$  cm. are side lengths of an isosceles triangle, then  $x = \dots \text{ cm.}$

(a) 10 (b) 5 (c) 15 (d) 4

2 Complete :

(1) Number of axes of symmetry of an equilateral triangle = .....

(2) The perpendicular from the vertex angle of an isosceles triangle bisects each of ..... and .....

(3) In  $\triangle ABC$ , if  $AB = 3 \text{ cm.}$  and  $BC = 5 \text{ cm.}$ , then  $AC \in ]\dots, \dots[$

④ If ABCD is a square , then  $m(\angle ACB) = \dots\dots\dots^\circ$

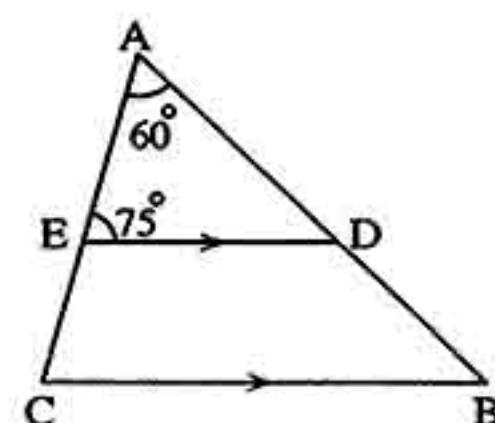
⑤ If  $A \in L$  where L is the axis of symmetry of  $\overline{BC}$  , then  $AB \dots\dots\dots AC$

[3] [a] In the opposite figure :

$$\overline{ED} \parallel \overline{BC}$$

,  $m(\angle A) = 60^\circ$  and  $m(\angle AED) = 75^\circ$

Prove that :  $AB > AC$



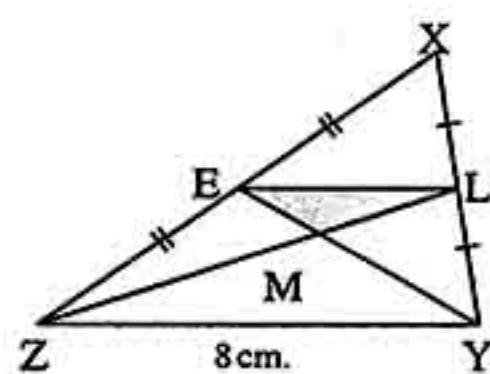
[b] In the opposite figure :

$\triangle XYZ$  in which : L and E are midpoints

of  $\overline{XY}$  and  $\overline{XZ}$  respectively.

$\overline{YE} \cap \overline{ZL} = \{M\}$  ,  $YZ = 8 \text{ cm.}$  ,  $YM = 4 \text{ cm.}$  and  $ZL = 9 \text{ cm.}$

Find : The perimeter of  $\triangle EML$



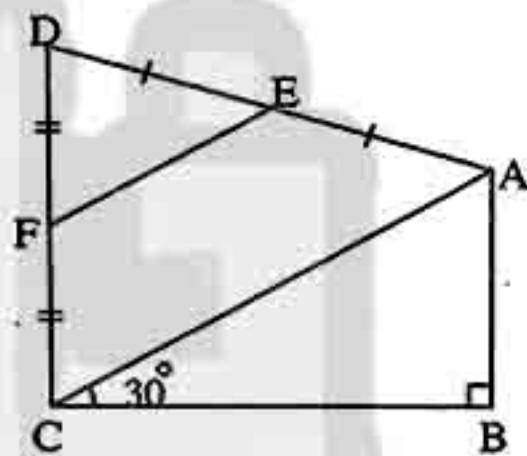
[4] [a] In the opposite figure :

$m(\angle B) = 90^\circ$  ,  $m(\angle ACB) = 30^\circ$

E is the midpoint of  $\overline{AD}$

and F is the midpoint of  $\overline{CD}$

Prove that :  $AB = EF$

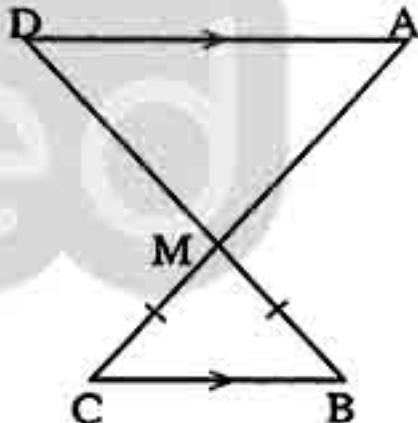


[b] In the opposite figure :

If  $\overline{AC} \cap \overline{BD} = \{M\}$

,  $\overline{AD} \parallel \overline{BC}$  and  $MB = MC$

Prove that :  $\triangle MAD$  is an isosceles.



[5] [a] In  $\triangle ABC$  : If  $m(\angle A) = 50^\circ$  and  $m(\angle B) = 85^\circ$

Find :  $m(\angle C)$  , then arrange the lengths of its sides ascendingly.

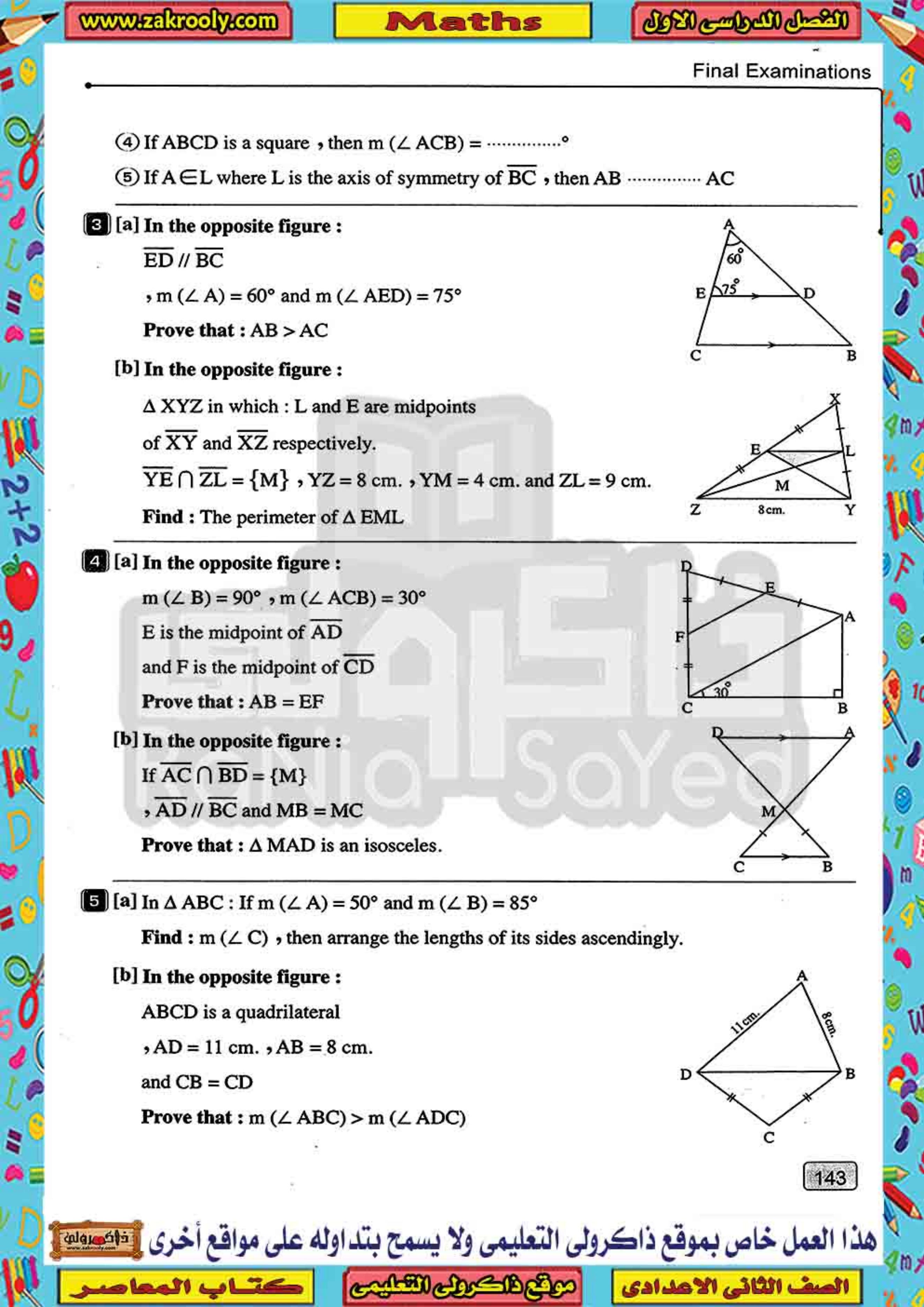
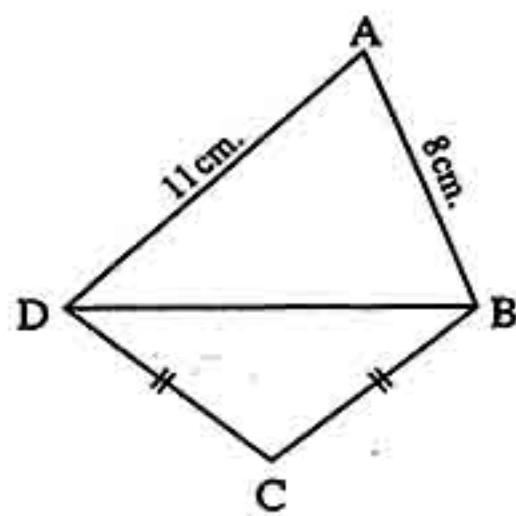
[b] In the opposite figure :

ABCD is a quadrilateral

,  $AD = 11 \text{ cm.}$  ,  $AB = 8 \text{ cm.}$

and  $CB = CD$

Prove that :  $m(\angle ABC) > m(\angle ADC)$





**Answer the following questions :**

**[1] Choose the correct answer :**

- (1) In  $\triangle ABC$  :  $m(\angle B) = 80^\circ$  and  $m(\angle C) = 50^\circ$ , then  $AB = \dots$ 
  - (a)  $BC$
  - (b)  $AC$
  - (c)  $2 AC$
  - (d)  $\frac{1}{2} BC$
- (2) The lengths 6 cm., 7 cm. and ..... can be lengths of the sides of a triangle.
  - (a) 15 cm.
  - (b) 13 cm.
  - (c) 18 cm.
  - (d) 11 cm.
- (3) In  $\triangle ABC$ , if  $m(\angle A) = 30^\circ$  and  $m(\angle B) = 90^\circ$ , then  $AC = \dots$ 
  - (a)  $\frac{1}{2} BC$
  - (b)  $2 BC$
  - (c)  $2 AB$
  - (d)  $BC$
- (4) The point of intersection of the medians of the triangle divides each of them with ratio ..... from the vertex.
  - (a)  $1 : 2$
  - (b)  $3 : 1$
  - (c)  $2 : 1$
  - (d)  $1 : 3$
- (5) In  $\triangle ABC$ ,  $m(\angle A) = 50^\circ$  and  $m(\angle B) = 100^\circ$  then .....
  - (a)  $AB > AC$
  - (b)  $AC < AB$
  - (c)  $BC < AC$
  - (d)  $AB = BC$

**[2] Complete :**

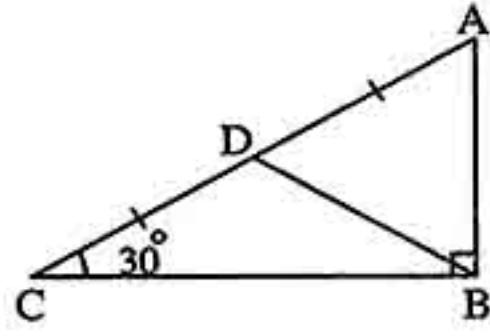
- (1) The measure of exterior angle of the equilateral triangle = ..... °
- (2) If  $\triangle ABC \cong \triangle XYZ$ , then  $\angle A \cong \dots$
- (3) The longest side in a right-angled triangle is .....
- (4) If  $\overleftrightarrow{XY}$  is an axis of symmetry of  $\overline{AB}$ ,  $D \in \overleftrightarrow{XY}$ , then  $AD = \dots$
- (5) Square with side length 5 cm., then its area = .....  $\text{cm}^2$

**[3] [a] In the opposite figure :**

$D$  is a midpoint of  $\overline{AC}$

,  $m(\angle B) = 90^\circ$ ,  $m(\angle ACB) = 30^\circ$

**Prove that :**  $\triangle ABD$  is an equilateral triangle

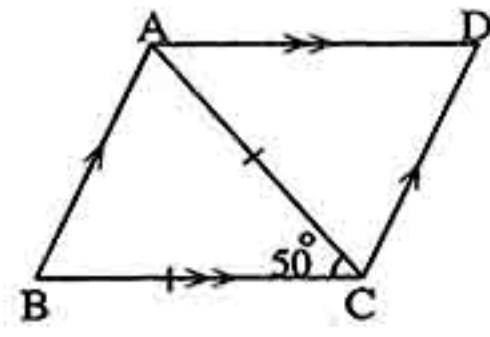


**[b] In the opposite figure :**

$ABCD$  is a parallelogram

,  $CA = CB$  and  $m(\angle ACB) = 50^\circ$

**Find with proof :**  $m(\angle D)$

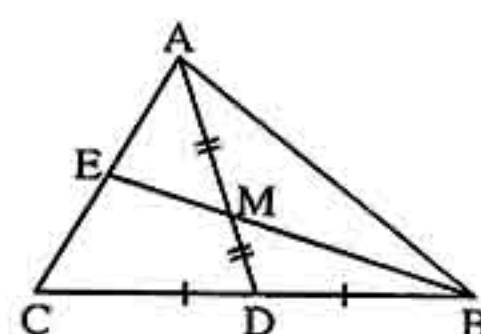


**4 [a] In the opposite figure :**

E and D are the midpoints of  $\overline{AC}$  and  $\overline{CB}$  respectively

If  $AD = 4.5$  cm and  $BM = 4$  cm.

**Find :** The length of each of  $\overline{MD}$  and  $\overline{BE}$

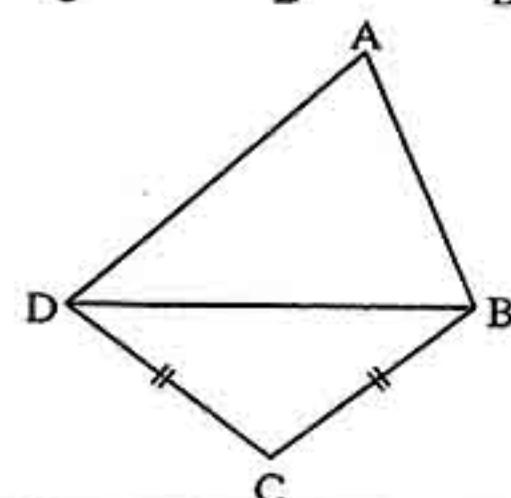
**[b] In the opposite figure :**

ABCD is a quadrilateral in which :  $AD > AB$

and  $BC = CD$

**Prove that :**

$$m(\angle ABC) > m(\angle ADC)$$

**5 [a] ABC is a triangle in which :  $m(\angle A) = 40^\circ$  and  $m(\angle B) = 75^\circ$** 

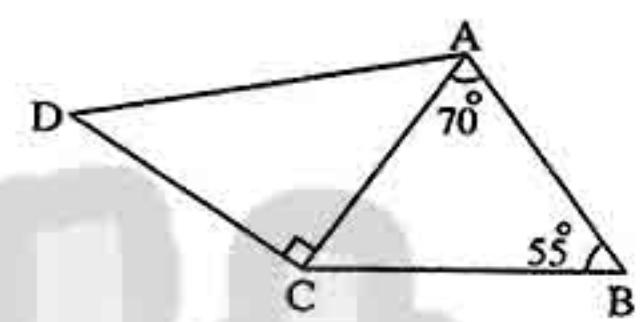
Arrange the lengths of sides of  $\triangle ABC$  in ascending order.

**[b] In the opposite figure :**

$$m(\angle BAC) = 70^\circ, m(\angle B) = 55^\circ$$

$$\text{and } m(\angle ACD) = 90^\circ$$

**Prove that :**  $AD > AB$

**13 El-Behira Governorate****Maths Inspection**

*Answer the following questions :*

**1 Complete the following :**

- (1) If the length of two sides of isosceles triangle are 8 cm. and 4 cm. , then the length of the third side is .....
- (2) The number of axis of symmetry of scalene triangle is .....
- (3) The length of the median of the right-angled triangle from the vertex of right angle equals ..... the length of the hypotenuse.
- (4) The base angles of the isosceles triangle are ..... in measure.
- (5) In  $\triangle ABC$  , if  $m(\angle A) = 40^\circ$  and  $m(\angle B) = 60^\circ$  , then the longest side is .....

**2 Choose the correct answer :**

- (1) If A lies on the line of symmetry of  $\overline{BC}$  then  $AB \dots AC$ 
  - (a) >
  - (b) <
  - (c) =
  - (d) //
- (2) The measure of the exterior angle of the equilateral triangle = .....
  - (a)  $90^\circ$
  - (b)  $60^\circ$
  - (c)  $120^\circ$
  - (d)  $180^\circ$
- (3) In  $\triangle ABC$  , if  $BC > AC$  , then  $m(\angle A) \dots m(\angle B)$ 
  - (a) >
  - (b) <
  - (c) =
  - (d)  $\geq$

## Geometry

④ If  $\Delta ABC$  is a right-angled triangle at B and  $m(\angle C) = 30^\circ$ , then  $AB = \dots \cdot AC$

(a) 2      (b)  $\frac{1}{2}$       (c)  $\frac{1}{3}$       (d) 3

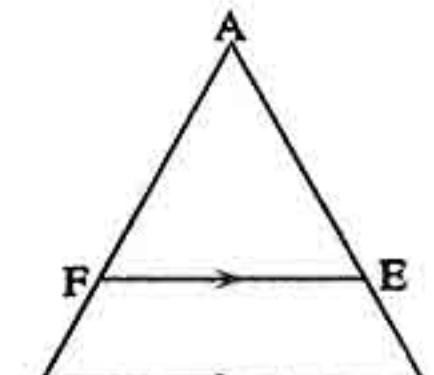
⑤ The sum of lengths of two sides of a triangle is ..... the length of the third side.

(a) greater than      (b) less than      (c) equal      (d) greater than or equal

[3] [a] In the opposite figure :

$$AB = AC, EF // CB$$

Prove that :  $AE = AF$



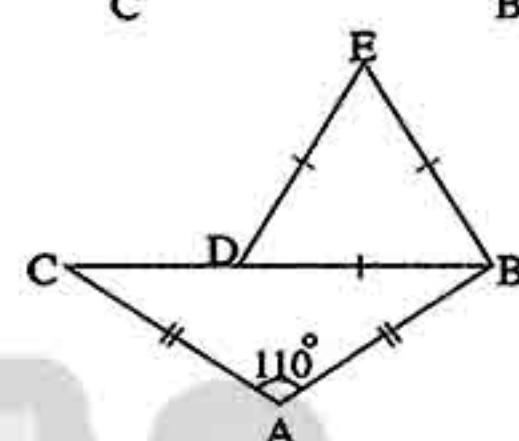
[b] In the opposite figure :

$$EB = ED = DB$$

$$, AB = AC$$

$$\text{and } m(\angle A) = 110^\circ$$

Find :  $m(\angle ABE)$



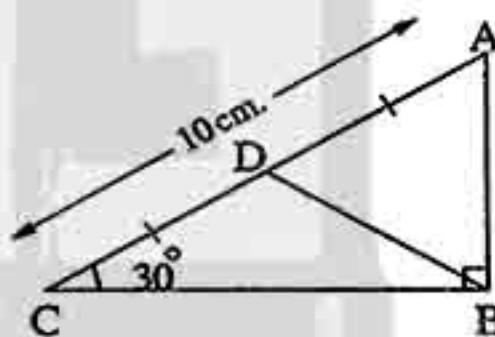
[4] [a] In  $\Delta ABC$ , if  $m(\angle A) = 50^\circ$  and  $m(\angle B) = 60^\circ$

Arrange the side lengths of  $\Delta ABC$  ascendingly.

[b] In the opposite figure :

$$m(\angle ABC) = 90^\circ, m(\angle C) = 30^\circ, AD = DC \text{ and } AC = 10 \text{ cm.}$$

Find : The perimeter of  $\Delta ABD$



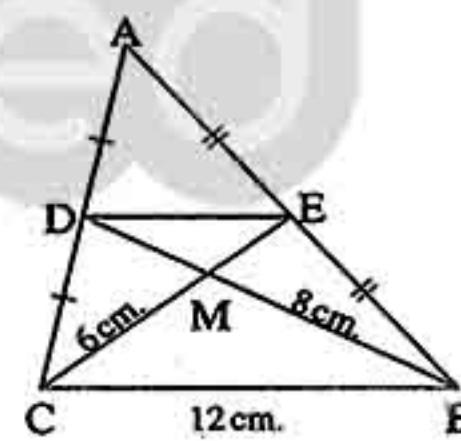
[5] In the opposite figure :

$$AE = EB, AD = DC$$

$$, MB = 8 \text{ cm.}, MC = 6 \text{ cm.}$$

$$\text{and } BC = 12$$

Find : The perimeter of  $\Delta MED$



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El-Minia Governorate

El-Minia Directorate of Education  
Governmental languages schools



Answer the following questions :

[1] Complete the following : (Calculator is allowed)

① The number of axes of symmetry in the equilateral triangle equals .....

② If the length of two sides in a triangle are 2 cm. and 7 cm.  
, then ..... < length of third side < .....

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③ The length of median which drawn from the vertex of the right-angle in the right-angled triangle equals .....

④ If the measure of an angle in an isosceles triangle is  $60^\circ$ , then the triangle is .....

⑤ The length of the side opposite to the angle of measure  $30^\circ$  in the right-angled triangle equals .....

**2** Choose the correct answer :

① XYZ is a triangle in which :  $m(\angle Z) = 70^\circ$  and  $m(\angle Y) = 60^\circ$  then  $YZ \dots \dots \dots XY$   
(a) >      (b) <      (c) =      (d) twice

② The numbers which can be lengths of sides of triangle are .....  
(a) 0 , 3 , 5      (b) 3 , 3 , 5      (c) 3 , 3 , 6      (d) 3 , 3 , 7

③ The measure of the exterior angle of the equilateral triangle equals .....°  
(a) 60      (b) 30      (c) 100      (d) 120

④ If the length of two sides in an isosceles triangle are 8 cm. and 4 cm. , then the length of the third side is ..... cm.  
(a) 4      (b) 8      (c) 3      (d) 12

⑤ If  $\Delta ABC$  is a right-angled at B ,  $AB = 6$  cm. and  $BC = 8$  cm. , then the length of the median drawn from B is ..... cm.  
(a) 10      (b) 8      (c) 6      (d) 5

**3 [a]** In  $\Delta ABC$ ,  $AB = 7 \text{ cm.}$ ,  $BC = 5 \text{ cm.}$  and  $AC = 6 \text{ cm.}$

Arrange its angles measures ascendingly.

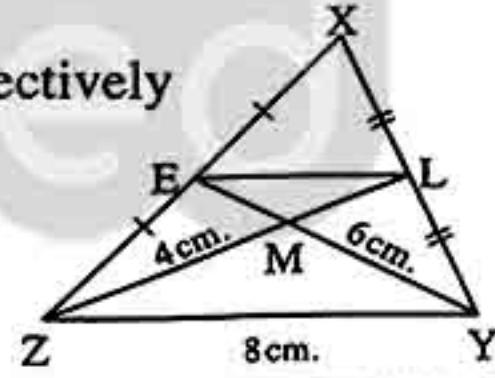
**[b] In the opposite figure :**

$\Delta XYZ$  in which : L and E are the midpoints of  $\overline{XY}$  and  $\overline{XZ}$  respectively

$$, \overline{YE} \cap \overline{ZL} = \{M\}$$

, YZ = 8 cm., YM = 6 cm., ZM = 4 cm.

**Find :** The perimeter of  $\Delta$  MLE



4 [a] In the opposite figure :

$$AB < AD, BC < CD$$

**Prove that :  $m(\angle ABC) > m(\angle ADC)$**

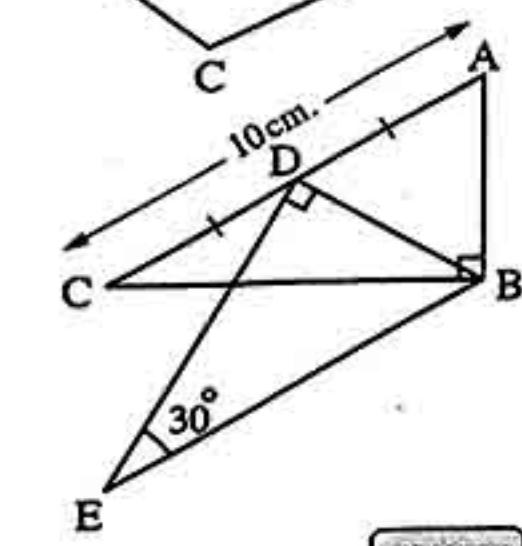
**[b] In the opposite figure :**

$$m(\angle ABC) = m(\angle BDE) = 90^\circ$$

, D is the midpoint of  $\overline{AC}$

,  $m(\angle E) = 30^\circ$  and  $AC = 10 \text{ cm}$ .

**Find :** The length of  $\overline{BE}$



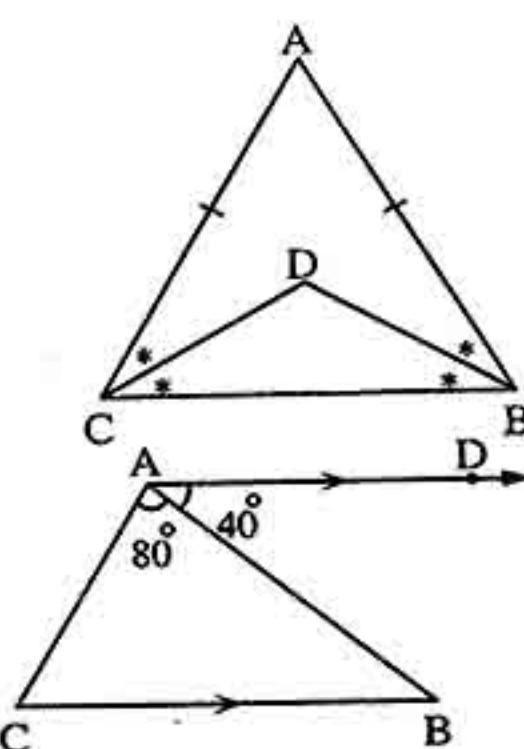
## Geometry

5 [a] In the opposite figure :

$AB = AC$ ,  $\overline{BD}$  bisects  $\angle B$

and  $\overline{CD}$  bisects  $\angle C$

Prove that :  $\triangle DBC$  is an isosceles triangle.



[b] In the opposite figure :

$\triangle ABC$  in which :  $\overline{AD} \parallel \overline{CB}$

,  $m(\angle DAB) = 40^\circ$  and  $m(\angle BAC) = 80^\circ$

Prove that :  $AB > AC$

15 South Sinai Governorate

Educational Directorate  
Tur Sinai Educational Zone



Answer the following questions :

1 Choose the correct answer from given answers :

① In isosceles triangle the base angles are .....  
 (a) complementary. (b) supplementary. (c) adjacent. (d) congruent.  
 ② The sum of the lengths of the two sides of the triangle ..... the length of the third side.  
 (a) double (b) equals (c) greater than (d) less than

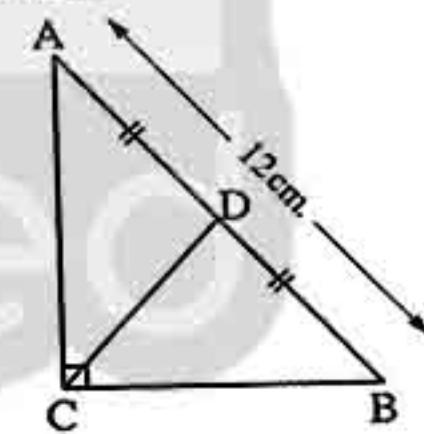
③ In the opposite figure :

If  $AB = 12$  cm.

, then  $CD = \dots$  cm.

(a) 12  
(c) 6

(b) 9  
(d) 3



④ The triangle that has one axis of symmetry is ..... triangle.

(a) an equilateral (b) an isosceles (c) a scalene (d) a right-angled

⑤ The ..... is a parallelogram where one of its angles is right angle.

(a) a rectangle (b) a square (c) a rhombus (d) a trapezium

2 Complete the following :

① The point that divides the median of the triangle in the ratio  $1 : 2$  from the base is the point of intersection of .....

② In  $\triangle ABC$ , if  $AB > BC$ , then  $m(\angle A) < m(\angle \dots)$

③ The sum of the measures of accumulative angles at point is .....°

④ ABC is a triangle in which :  $m(\angle B) = 130^\circ$ , then the longest side of its sides is .....

⑤ In the right-angled triangle , the length of the side that opposite to the angle of measure  $30^\circ$  = ..... the length of the hypotenuse.

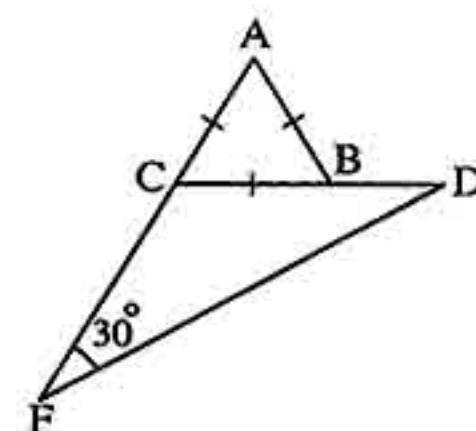
**[3] [a] In the opposite figure :**

ABC is an equilateral triangle

,  $F \in \overrightarrow{AC}$ ,  $D \in \overrightarrow{CB}$

,  $m(\angle DFC) = 30^\circ$

**Prove that :**  $\Delta DCF$  is an isosceles triangle.



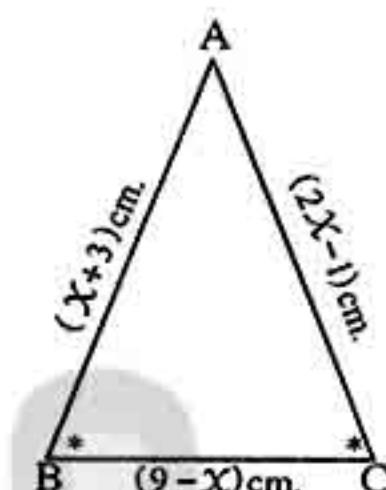
**[b] In the opposite figure :**

ABC is a triangle in which :

$m(\angle B) = m(\angle C)$

**Find :**

The perimeter of  $\Delta ABC$

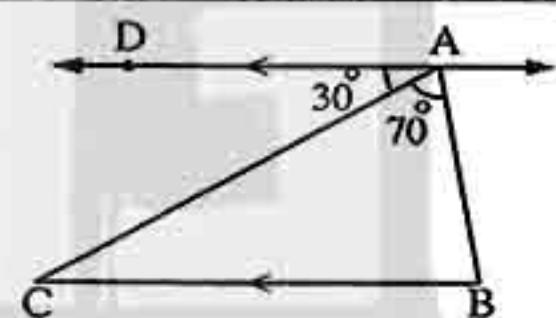


**[4] [a] In the opposite figure :**

$\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$ ,  $m(\angle BAC) = 70^\circ$

and  $m(\angle DAC) = 30^\circ$

**Prove that :**  $AC > BC$



**[b]** ABC is a triangle in which :  $AB = 7$  cm.,  $BC = 5$  cm. and  $AC = 6$  cm.

Arrange the measures of its angles in an ascending order.

**[5] [a] In the opposite figure :**

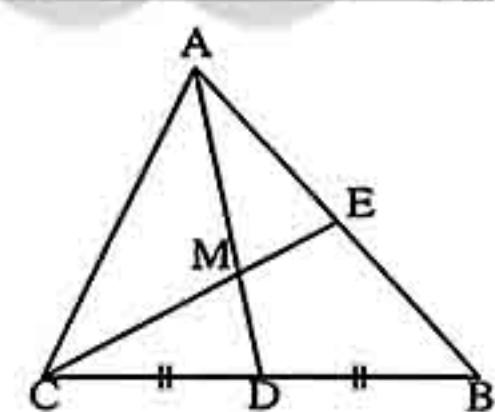
ABC is a triangle

, D is the midpoint of  $\overline{BC}$ ,  $M \in \overline{AD}$

, where  $AM = 2 MD$

Draw  $\overrightarrow{CM}$  cuts  $\overrightarrow{AB}$  at E , if  $EC = 12$  cm.

, find : The length of  $\overline{EM}$



**[b] In the opposite figure :**

$BA = BC$

and  $\overrightarrow{BE}$  bisects  $\angle CBD$

**Prove that :**  $\overrightarrow{BE} \parallel \overrightarrow{AC}$

